J.4698-J


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No. 4258. Vol. CLXVIII. LONDON, SATURDAY, APRIL 8, 1905. [Pp. 120+48.


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# The Goulstonian Lectures

ON

# SOME CONSIDERATIONS ON THE NATURE OF DIABETES MELLITUS.

*Delivered before the Royal College of Physicians of London on March 16th, 21st, and 23rd, 1905,*

BY W. CECIL BOSANQUET, M.A., M.D. OXON., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO CHARING CROSS HOSPITAL AND TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST; FORMERLY FELLOW OF NEW COLLEGE, OXFORD.

## LECTURE I.

*Delivered on March 16th.*

MR. PRESIDENT AND GENTLEMEN,—I must first thank you for the honour which you have conferred upon me by inviting me to deliver these lectures—an honour which I very highly appreciate but which has nevertheless proved to me a source of considerable embarrassment. Indeed, the hesitation which I at first felt about undertaking the duties of the post has since been strengthened into an assured conviction that it was only too fully justified. It must always, I think, be a task of great difficulty for one of the junior Fellows of this College to deliver a lecture before his seniors who must needs be better acquainted with all the facts of medicine than he; and the difficulty is specially great in the case of one who, like myself, is attached only to a comparatively small hospital where material for study is much less than that available at our larger institutions. Fortunately, it has been wisely arranged that the Goulstonian lecturer should deal mainly with pathology—the theoretical side of disease—rather than with clinical phenomena or treatment. And as pathology is a constantly advancing science it may be profitable at times to review some of the facts recently ascertained and the hypotheses put forward to explain them, if only to elicit the truth that there are still very lamentable gaps in our knowledge upon all medical subjects and that the continual stream of medical writings rather conceals than fills in these deficiencies.

In choosing for my subject the nature of diabetes I am conscious that I may appear guilty of more than ordinary presumption, inasmuch as it is one which has been most exhaustively investigated by one of the senior Fellows of this College who has made the subject his own and attained therein a position of authority which is recognised throughout the civilised world. Dr. F. W. Pavy, by his careful and illuminating researches into the physiology of the assimilation of carbohydrate food, has thrown light into some of the dark corners which abound in the field of diabetes. Yet he himself would readily, I think, admit that the nature of the disease is still far from being finally determined; that there are many problems awaiting solution and scope for much further research and speculation.

As it was the orginal intention of the founder of these lectures that they should be devoted to demonstration of morbid anatomy, so I hope to deal mainly with the relation of the disease to structural alterations in the organs, recognisable after death, and to discuss the reasons which exist for associating any one of them causally with the existence of diabetes. But in recent days all the great advances in pathology have been made by means of experiments on living animals and I would refer also to the results of some such researches which have appeared to give rise to conditions resembling the human malady. Lastly, there have in the last few years been promulgated theories connected with the resistance of the body to parasitic invasion which have involved conjectures as to some of the processes by which food is assimilated by the tissues. It may be not wholly uninteresting, though unfortunately premature so far as certainty is concerned, to speculate as to the bearing of these theories on the pathology of diabetes.

### DEFINITION OF DIABETES.

In the discussion of any matter it is advisable to make some attempt to define the terms which we are using and it may be useful at the outset to consider for a moment what it is that we mean when we speak of diabetes mellitus. It is true that definition is impossible in science before we know all about the phenomenon which we wish to define, and for this reason final definitions are practically unattainable, except in abstract reasoning such as mathematics, since knowledge of natural phenomena and their causes is constantly growing. In the field of medicine we can see the process of modification of our ideas in accordance with the advance of knowledge constantly at work. Thus originally, as Allbutt has pointed out, diseases were groups of symptoms which recurred in association sufficiently frequently to constitute a definite idea. No doubt scientifically minded persons early realised that these groups were the outward and visible signs of altered conditions of the body, but of the nature of the condition present in each case they had no knowledge. Later it was found that certain structural alterations were invariably associated with the symptoms of many diseases and these underlying physical conditions assumed more and more importance in the connotation of the name of the disease. In these instances the stage of morbid anatomy had been reached. Later still we have acquired a knowledge of the causes of certain diseases and of some at least of the means by which they produce their characteristic symptoms. This knowledge is only definite in the case of some of the infective diseases, such as tetanus or tuberculosis, in which we can isolate the pathogenic bacteria, investigate the poisons which they generate, and unravel to some extent their modes of action and the defensive reactions of the infected organism.

In the case of many diseases we are still in the stage of morbid anatomy; examples are seen in the various anæmias, of which nothing more is known than the alterations in the constitution of the blood. In diabetes we have hardly as yet attained to even this stage of knowledge. Attempts have, indeed, been made to show that changes are invariably to be found after death in the pancreas, of which I hope to say more in my next lecture; but at present there is no consensus of opinion as to the constancy of these changes—or rather, it has been pointed out there are many cases of the disease in which no alterations in this organ can be demonstrated, so that there seems a danger of even this association—the most hopeful prospect of establishing the disorder on an anatomical basis—proving elusive. Yet we know that it is impossible for perversions of function to occur in normal circumstances without coexistent alteration of structure, since function is merely structure undergoing change, as was pointed out by G. H. Lewes many years ago; so that if the conditions of the cell remain the same and its structure the same the function must continue the same likewise. In other words, all functional defects must arise from structural lesions, whether these are gross, or microscopical, or ultramicroscopical.

In the case of diabetes the gradual alteration in the connotation of the name can be easily recognised. In the earliest times, when the name was first invented, there can be no doubt that all conditions accompanied by polyuria were classed together; to all the comparison of the patient to a syphon transmitting a continual stream of water was equally applicable. The discovery of the existence of sugar in some cases of the disease was made late in the history of medicine. In the East it was unknown till some hundreds of years after the commencement of the present era and in the West it remained undiscovered till the time of our countryman, Willis, towards the end of the seventeenth century who noted the sweet taste of the urine. The actual proof of the presence of sugar was afforded a little later by Dobson. The spirit of Western inquiry, as contrasted with Eastern apathy, is well exemplified by the rapid growth of information on the subject which followed Willis's discovery. The writer of an anonymous medical treatise on diabetes, published at Oxford in 1745, notes that the disease was then attracting much attention and discussion; and up to the present time an ever-increasing volume of writings has centred round its pathology.

Since the discovery of sugar in the urine and the resulting separation of saccharine from insipid diabetes and from other causes of polyuria further steps in the subdivision of the subject have been made. In the first place, it is recognised that all cases in which there is sugar in the urine are not

diabetes mellitus. Glycosuria is now known to be a possible accompaniment of many diseases having no apparent connexion with the malady with which the condition was first associated. Cerebral injuries, many nervous conditions, Graves's disease, and other maladies may be accompanied by glycosuria, yet we do not call them diabetes. We have then to inquire what criterion exists for the identification of true diabetes as apart from such conditions of symptomatic glycosuria and the question is not easily answered. It would seem that our only grounds in most cases for asserting that a patient is suffering from diabetes are the amount and the persistence of the glycosuria. It is manifest that such criteria are unsatisfactory. Taken separately each would be fallacious. A considerable quantity of sugar may exist at any one time in the urine apart from diabetes. I well remember a patient having been brought into Charing Cross Hospital one night comatose, with a fairly large amount of sugar in the urine. He was supposed to be suffering from diabetic coma and was treated somewhat energetically by bleeding and infusion of saline solution. At the necropsy the case was found to be one of cerebral hæmorrhage, yet the quantity of sugar in the urine had been considerable. On the other hand, if permanency of the glycosuria is to be the necessary condition for distinguishing diabetes we should be unable to admit that a case could ever be cured, nor could the condition be satisfactorily diagnosed until the patient was dead. The old Greek proverb that we should call no one fortunate till he was dead, because a reverse of luck might at any time occur, was perhaps a wise piece of advice, but it would be unsatisfactory in medical practice, where it would sometimes seem that the assignment of a name to a disease is only less gratifying to the patient than its cure or alleviation. We cannot base the definition of a disease upon its insusceptibility of cure. And if we ask how long the glycosuria must last before we can call a case diabetes it is not easy to give an answer. Yet in diabetes, in the absence of any ascertained morbid anatomical changes invariably associated with the disease, we seem compelled to rely for grounds of diagnosis and even of definition upon the amount and persistence of the glycosuria. How unsatisfactory this is will be readily apparent when we consider what our position would be if we knew only the fact of the existence of albumin in the urine in certain conditions, without possessing any knowledge of structural changes in the kidneys, or if we were similarly limited in our knowledge in the presence of hæmaturia. We might perhaps get as far as recognising the existence of mild "functional" conditions in which the disorder cleared up without difficulty and grave cases of organic disease which rapidly went downhill—and that is about as far as we have got in the study of diabetes—but exact knowledge would be quite impossible.

As a sign of the present unsatisfactory results of attempts to define diabetes it is sufficient to indicate the conditions at present grouped under the term. Tyson gives the following varieties of glycosuria, to all of which the name diabetes is sometimes applied, arranged according to their causes: (1) alimentary glycosuria due to imperfect assimilation of carbohydrates; (2) glycosuria due to over-production of glucose from the hepatic glycogen; (3) vaso-motor glycosuria, owing to too rapid passage of glucose through the liver, without being converted into glycogen; (4) defective oxidation of glucose in the system (this form he associates with pancreatic and suprarenal disease); and (5) incurable diabetes, in which proteid is converted into sugar, including the fixed proteid of the tissues (this is accompanied by acid intoxication.) The group of disorders included in this list is manifestly made up of a heterogeneous collection of but slightly connected conditions which only our ignorance of the nature of the phenomena leads us to classify under the same term. It seems possible that some at least of the obscurity in which the subject of diabetes is wrapped arises from a failure to distinguish the disease from conditions which simulate it and that we must here apply the old maxim *divide et impera* and subdivide the group before we can extend the realm of knowledge.

*Alimentary and composite diabetes.*—In this direction an important division has been made in the subject by the distinction drawn between two forms or stages of diabetes mellitus—between cases on the one hand in which apparently the sugar which emerges in the urine is derived entirely from the carbohydrate materials contained in the food and cases in which, on the other hand, some of it, at all events, is formed by breaking down of the tissues of the patient. To these the names of "alimentary" and "composite" diabetes have been assigned by Pavy. This brings us to one of the remarkable points about the disease to which it is, perhaps, curious that more attention has not been paid. In many instances the first stage of the malady is signalised only by an alimentary glycosuria—that is, by an apparent inability to assimilate any considerable quantity of carbohydrate food. In the later stages the same patient not only cannot assimilate this kind of food but he also suffers from an actual breaking down of his own tissues into sugar. It is difficult to believe that the two conditions are the same in any way or that one can really pass into the other. To suppose that the presence of excess of sugar in the system acts poisonously and leads in time to a destruction of the body cells, of such a nature that the very poison at work is one of the products of the disintegration, is absolutely contrary to all analogy in vital chemistry. In cases in which special bodies are formed in the animal economy in response to the injection of toxic materials we find that the substance is of such a nature as to neutralise the effects of the poison, as in the process of immunising animals against certain vegetable poisons (abrin, ricin, &c.) or against the toxins of bacteria. In the case of the commoner poisons, mineral and organic, no such antitoxic power is, indeed, exhibited; but no instance of the actual poison itself being formed by the cells as a result of its own action is known. It is unlikely, then, on general grounds that sugar should form a special exception and cause breaking down of the cell protoplasm into sugar. There is indeed, no proof, so far as I am aware, that it is actually a poisonous substance. It appears to be a normal constituent of the blood, though existing there in very small quantities; and in default of direct evidence we should suppose that the only evil effects which it would be likely to exert would be by increasing the density of the plasma and thereby altering the osmotic pressure relatively to the surrounding tissues and to the formed elements of the blood.

The facts just mentioned—namely, the existence of alimentary and composite forms of diabetes—appear to constitute the ground-work of our knowledge of the disease, in which everything else is largely a matter of speculation and conjecture. We know that in the early stages of many cases of diabetes it is possible entirely, or almost entirely, to prevent the appearance of sugar in the urine by diminishing the amount of carbohydrate material given in the food. The inference seems necessarily to be that the sugar in the urine is derived directly or indirectly from the matter ingested. On the other hand, we know that in severe cases and in the later stages of many cases which originally appeared to be instances of alimentary diabetes the sugar in the urine persists in the absence of all carbohydrate food—nay, more, in conditions of starvation, in the absence of all food of any kind whatever. Here it is equally necessary to believe that the sugar is derived from the breaking down of some substance forming part of the living body. These being the two most securely established facts with regard to diabetes it is, I venture to think, to the explanation of them and of their mutual relationship that it is most important to direct attention in any attempt to explain the nature of the disease. It is comparatively useless to explain one phenomenon without explaining the other simultaneously; any hypothesis which fails to embrace both together is defective *ab initio*.

It is necessary, then, to look about for some explanation of the phenomena of diabetes capable of embracing both alimentary and composite cases. Now we know that sugar may appear in the urine in many conditions which are not diabetes as a result of ingestion of saccharine food. On the other hand, we know of no other condition in which there is an internal formation of sugar by disintegration of materials existing in the body. Further, this latter feature is characteristic of the developed disease, when all the conditions are presumably best marked. It appears, then, reasonable to regard this internal formation of sugar as the essential characteristic of the disease and to turn our attention specially to this rather than to the alimentary factor. So far as I can judge the reverse procedure has generally been adopted in studying the disease and the result has been to leave what I believe to be the most striking feature of diabetes mellitus unexplained.

We have to ask, then, Is it possible to formulate any hypothesis, consistent with what we know of the phenomena of diabetes, which shall explain alimentary diabetes in terms, if I may so express it, of composite diabetes? Now it may

be taken as admitted that the sugar which appears in the urine is merely filtered off from the blood—in other words, that glycosuria presupposes glychæmia. The sugar present in the blood may arise in any one of several ways—from increased ingestion of sugar in the food or from increased formation in the body, or from diminished elimination or assimilation of the amount normally present. In alimentary glycosuria it would seem that the sugar reaches the blood by absorption from the intestine; in composite diabetes it seems that some of it comes from the breaking-down of the tissues. Have we any means of assuring ourselves that in either case only one process is at work? In the case of the latter condition it seems certain that there is no alimentary element coexisting, since in starvation no food is taken. In the former case the same exclusion is not possible. It is true that in alimentary glycosuria cutting off the supply of carbohydrate food will stop or diminish the exit of sugar in the urine, but this does not necessarily constitute a proof that such food is the sole source of the sugar. The coexistence of an internal source of sugar formation cannot be excluded. Indeed, Seegen states that dieting in some instances may decrease the sugar which appears in the urine but not that which exists in the blood. Now the amount of sugar present in the blood is the resultant of the forces which respectively pour sugar into it and remove it, and sugar may be removed by assimilation as well as by excretion. It is conceivable that the body may have the power of dealing with a certain quantity of this substance but not with more than a definite amount. If the whole of this amount is formed within the body it is clear that any further quantity entering from the intestine will appear in the urine; while if a large proportion, but not the whole, of the amount is formed within the body then the quantity of sugar which can enter from the intestine without causing glycosuria will be so much less than in a normal person who either forms no internal sugar or only a comparatively small amount. I venture to think that this possibility is at least worth considering as involving less difficulty in the explanation of the conversion of a case of alimentary glycosuria into one of composite diabetes than is involved in the supposition of the onset of a new pathological process. In favour of an internal formation of sugar in diabetes may be quoted the observations of Kolisch that in bad cases a carbohydrate diet may cause no increase in the amount of sugar present in the urine, which may vary from day to day quite independently of the food taken. If such a conception were admissible a certain amount of clearness would be gained for a definition of diabetes which would consist in an increased internal formation of sugar. In mild cases this would merely diminish the amount of sugar which could be absorbed from the alimentary canal without appearing in the urine; as the case grew graver and more internal secretion was formed, so the patient's tolerance for carbohydrate food would diminish; and finally, the amount of internal sugar would be so great as to appear in the urine even in the absence of any alimentary supply.

It is not necessary to suppose that the amount of sugar which can be dealt with by the tissues without appearing in the urine is the same in all persons. Thus von Noorden found that of two healthy men one was capable of assimilating 150 grammes of glucose administered to him, while the other exhibited slight glycosuria when thus treated. Probably if enough sugar were given at once everyone would excrete some of it in the urine. Those who cannot deal with so much as average persons are the alimentary glycosurics; but there is no reason why they should develop into diabetics apart from an increased internal sugar formation, and as a fact they do not all so develop. The power of assimilating sugar varies even in the same person in different circumstances, as a man who is working hard will eliminate less sugar in his urine, as the result of an overdose of this substance, than one who is at rest (Breul). Authors appear to differ as to whether carbohydrate food, other than sugar itself, can produce alimentary glycosuria in healthy persons. Theoretical considerations would appear to be on the side of Naunyn and others who affirm this possibility, since it is fairly established that a certain proportion of starchy food is converted into sugar in the alimentary canal (Ellenberger and Hoffmeister). In pathological conditions, such as fevers and alcoholism, it has been actually proved by Strauss that glycosuria may result from the ingestion of starchy food.

## CAUSATION.

Leaving for the present the question of the essential nature of diabetes, we may turn our attention to the causation of the disease. With regard to the causes which determine the onset of diabetes nothing new seems to have been revealed by recent research. We may not now agree with Avicenna that the most important of these causes is the eating of quinces, or with Trnka de Krzowitz that "aquosi potus ac praeprimis tepidi abusus haud difficulter diabetem inducit,"[1] any more than with the supposition of the Rabbi Moyses that the drinking of Nile water was the most potent cause of the malady as he saw it in Egypt, but our positive knowledge is not much greater than that of early writers. The association of the disease with alcoholic habits was noticed by our forefathers in the medical profession. Dolæus attributes the onset of diabetes to drinking cyder and Willis to indulging in Rhenish wine, and there seems to be no doubt that alcoholism may play a part in its causation.

Another poison to which some importance has been attributed in the causation of diabetes is tobacco. Stern states that not only does the excessive use of this narcotic protract the duration of an alimentary glycosuria and increase the quantity of glucose in the urine but that it seems to transform slight chronic glycosuria into severe diabetes. He attributes the action of tobacco to the absorption of small doses of carbonic oxide in the process of smoking, sufficient to induce a chronic intoxication with this substance. This theory seems scarcely probable; for, although it is known that poisoning with carbonic oxide may be accompanied by glycosuria, one would think that the amount of this gas absorbed by the mucous membrane of the mouth would be insignificent. It is only in the case of those who inhale the smoke that such a cause would appear likely to be operative. Perhaps some of the deleterious effects attributed to cigarette smoking may result in this way; but I do not know of any observations tending to connect diabetes with this form of indulgence in tobacco more than with any other. Lorand notes that some of his diabetic patients confessed to being large smokers of cigars.

The presence in the urine of glycuronic acid—a near ally of sugar—has been observed after intoxication with a large number of substances: phosphoric acid, phosphorus, lactic acid, hydrochloric acid, strychnine, curare, arsenic, butylchloral hydrate, morphine, hydrocyanic acid, chloroform, and turpentine (Sydney Martin). To the form of diabetes which follows phloridzin poisoning and the injection of suprarenal extract I shall refer later.

The influence of heredity is perhaps now more fully recognised than was formerly the case. Thus, Tyson puts the hereditary cases down as one quarter of the whole number and other writers at an even higher figure; and with heredity we must class the racial incidence of diabetes which seems to affect a larger percentage of the population among the Jews and Oriental peoples than among Europeans. The greater liability of Jews than of other races to suffer from diabetes has indeed been denied by Pollatschek, and statistics on the subject are liable to be fallacious, but on the whole the fact seems well established. Thus Lorand has collected statistics from his own native town, in which there are 20,000 inhabitants; of these 3000 are Jews. He finds that diabetes is rare among the Christian population but so common among the Jews that there is scarcely a family of any size which has not among its members some sufferer from this malady. This same writer has investigated the question whether the children of diabetic parents are liable to suffer from alimentary glycosuria and thinks that the question can be answered in the affirmative—a consideration which may lend some further support to the belief in the hereditary character of the disease. But the evidence adduced is not quite convincing as to the existence of this phase of heredity in any large number of instances.

In spite of the well-established fact of the appearance of diabetes as a sequel of an attack of some infectious disease, such as enteric fever, influenza, or diphtheria, little evidence exists which seems in any way to point to an infective cause of diabetes itself—that is to say, there is nothing to indicate that it is the direct effect of a toxin formed by a pathogenic bacterium. The experiments of Charrin and Carnot, in which diabetes was produced by injection of cultures of micro-organisms into the pancreatic duct, must be explained on the ground of the production of a pancreatitis rather than as proving the origin of diabetes from the direct effects of toxins. The action of syphilis as a cause of diabetes is probably exerted in the same direction. Schmitz examined the records of 4389 diabetic patients and among them he

[1] This appears to refer to polyuria a potu, not to saccharine diabetes.

found only four married couples; from this it would appear that the disease is not communicated from one individual to another. On the other hand, some writers maintain that conjugal infection in diabetes is not at all rare. The evidence has been recently collected by Hutinet who considers that the infection may be conveyed by the saliva; he admits, however, that this form of diabetes is less severe and more amenable to treatment than other kinds. General experience hardly bears out the contention that the malady is infectious.

Lastly, much attention has been directed to the influence of the nervous system in the causation of diabetes. On the one hand, overwork and consequent exhaustion may apparently induce the disease, as in the case of the youth long ago recorded by Boerhaave, who applied himself to his studies night and day, keeping himself awake by continual potations of tea and coffee. (Noctes diesque studiis incumbebat: somnum arcebat continua pocillatione theae atque caffeae.) This cultivation of the intellectual faculties to the neglect of hygienic principles was followed by the onset of diabetes. To this as an example of diabetes from overwork it might perhaps be objected that the tea and coffee drunk may have acted as poisons so as to bring the case into the toxic category, but subsequent experience seems to support the belief that mental strain may be a factor in inducing the disease. The incidence of diabetes upon the Jews has been by some attributed to the anxieties incident to the callings which they tend to adopt. Sudden shock and excitement have also been quickly followed by the onset of diabetes—*pathemata animi, presertim terror*, as Trnka de Krzowitz phrases it; and present-day observation bears out the dicta of our predecessors in this respect.

Injuries to the head are more often followed by temporary glycosuria than by lasting diabetes but the latter is said to ensue occasionally. Von Oordt noted the presence of alimentary glycosuria in many cases of cerebral disease and Haedke observed this phenomenon in 15 cases out of 25 suffering from shock. Hirschfeld found that the glycosuria seen in cases of injury to the skull was only transitory but Lenné states that in certain instances it may remain permanent.

Experimentally many varieties of injury to the nervous system may produce glycosuria. Besides Bernard's "puncture" and his operation of galvanising the central ends of the cut vagi, destruction of the pons and of the posterior crura cerebri, section of the optic thalami, section of the medulla and of the cervical cord, extirpation of the cervical sympathetic, and other lesions have been followed by glycosuria. Stimulation of the depressor nerve has had the same effect and even section of the sciatic has done the same. Sciatica itself has been stated to cause diabetes but it is at least as probable that the nerve lesion was caused by the general disease as that the opposite sequence took place. An experiment illustrating the effect of nervous influence upon the excretion of sugar is seen in the experience that if a cat be merely fastened down upon the operating table, without any further injury, sugar at once appears in the urine, the so-called "*Festschnallungsdiabetes*" of the Germans (Boehme and Hoffmann.)

Connected with the question of the nervous causation of diabetes is the discovery that glycosuria is common among the insane. It is said to occur more frequently in patients suffering from depressive forms of mental disease than among the more active varieties, which would suggest that in such cases there may be a failure either in the power of utilising sugar in the tissues or in the formation of some necessary secretion rather than an active production of sugar such as would seem to occur in the other nervous conditions which have just been mentioned. We must also bear in mind the hereditary nature of diabetes and its apparent tendency to appear in the offspring of neurotic stocks, other members of which have exhibited signs of more or less marked mental disease.

On the other hand, it is certain that only a small number of those persons who are exposed to the action of the causes just enumerated—continued hard work, shocks, and injuries—suffer from diabetes in consequence, and it is equally certain that the disease often occurs without the aid of any of these exciting causes. It is legitimate, I think, to question the reality of the causal nexus in some at least of the cases attributed to mental factors. It is difficult to be sure that we are not confusing *post hoc* with *propter hoc* in many such instances. Thus in the case of injuries and shocks it is to be borne in mind that these accidents cause patients, previously healthy in their own estimation, to seek medical advice. The urine will then be examined, and whether a temporary traumatic glycosuria be found or a pre-existing diabetes be discovered the case is likely to be looked upon as one of diabetes following injury. Again, in cases of diabetes which come under notice with the disease already developed the onset may be wrongly attributed by the sufferer, when questions are asked, to one or other of the nervous causes mentioned, and he may hence be classified as an instance of nervous diabetes when the malady was really due to some entirely different cause. There are at least few hospital patients who have not suffered from some injury in their past lives and who are not only too ready to associate any subsequent ailment with such an accident, just as every child belonging to this class who is ill has always had a fall to which maladies of the most varied description can be assigned. Hence I am inclined to think that a certain amount of scepticism is justifiable as to many, at all events, of the cases attributed to such causes.

With a view to estimate as far as possible the frequency with which the various causes are at work in cases of diabetes, or at least in cases so classified—for as previously suggested I think that, with only one symptom to guide us, many different conditions are grouped under this term—I have looked up the notes of such cases of the disease as have been treated in Charing Cross Hospital in recent years. It must be admitted that hospital patients are not an ideal class in which to investigate the matter. Such as they are I have found notes of 80 cases, of which 56 were males and 24 females (a ratio of 7 to 3).

To take first the class of causes just mentioned I found that in only two cases was the onset of the disease attributed to worry and anxiety, while in one case a shock and in one a fall were assigned as causes (5 per cent.). The most important antecedent, so far as could be gathered from a consideration of the histories of the patients, was alcoholism, which was a precedent condition, if not a cause, in no less than 13 cases, or 16 per cent.; but we must remember that it is a common failing and may be only accidentally associated. Syphilis had certainly occurred previously in six cases and probably in four others, making 12½ per cent. in which it might be assigned as a cause of the malady. Gout was an association in five instances. If Toogood's observations as to the causation of gout among the poor are to be relied upon these cases also might be attributed to the effects of indulgence in alcohol. With regard to heredity, there were six cases (two females and four males) in which other members of the patients' families had suffered from diabetes. The most striking instance was that of a man, aged 50 years, who had two brothers and one sister either suffering from or dead from diabetes. In each of the other instances only one other member of the family had been affected. In four cases (two males and two females) there was a family history of insanity or nervous disease. Taking them altogether, heredity was only discoverable as a possible causal factor in 12½ per cent. of the whole number, a much smaller proportion than is assigned to this cause by the writers whom I have previously mentioned. In the great majority of the cases no explanation of the onset of the disease was given by the sufferers. It had come on insidiously and as far as could be gathered spontaneously. Here, perhaps, I may remark upon the large number of instances among these cases in which complaint was made of abdominal pain—generally epigastric or hypochondriac. In one or two instances intestinal disturbances, such as diarrhœa and vomiting, had preceded the apparent onset of the diabetes sufficiently closely to attract the patient's notice and in three other cases jaundice had occurred at some previous period. These features may not be without interest in view of the possible connexion of diabetes with pancreatic disease.

### MORBID ANATOMY.

I now turn to the morbid anatomy of the disease, the changes found in the different organs of the body in those who have died from diabetes. Ever since Claude Bernard's great discovery of the existence of glycogen in the liver and of the possibility of causing this substance to be discharged into the blood in the form of sugar by nervous action, the liver has received the greatest amount of attention in relation to the pathology of diabetes mellitus. Yet it can hardly be denied that the result has been on the whole disappointing. It must have seemed at first that there was at length a prospect of solving the mystery of this disease

which had remained "a marvel" since the time of Aretæus (*θαῦμα τὸ διαβήτεω πάθος*). But although it seems certain that many cases of glycosuria, especially those which ensue as results of nervous lesions, are referable to this mode of causation, we are apparently as far as ever from explaining on this basis the nature of diabetes. It even seems legitimate to wonder whether we have not been unduly hypnotised by the phenomena of glycogenesis and led to concentrate our attention upon a side issue.

The facts ascertained with regard to the presence of glycogen in various tissues seem to point to its constituting a reserve of nutriment for actively growing cells. Thus it is found in the cells of tumours, in germinal tissues, in the proliferating membrane of hydatid cysts, and sometimes in leucocytes. It appears to be associated with activity in the cells which contain it. May it not be the case that it is stored up by the liver cells when it, or some forerunner of it, reaches them from the food, as a fuel for their own activity which is evidently great and manifold, rather than as a reserve upon which the body at large may draw? Pavy's researches seem to show that the blood of the hepatic vein is no richer in sugar than that of the rest of the blood instead of containing more sugar as it should do if the liver were constantly furnishing sugar for the use of the body cells elsewhere. In short, the function of the liver as normally a distributer of sugar to the rest of the body is at present an unverified hypothesis.

Post-mortem examination of persons dead from diabetes reveals two main changes in the liver. In a certain proportion of cases this organ is found fatty. Thus many years ago Mead considered a "steatomatous" condition characteristic of the liver in diabetes and this phenomenon has often been noted since. But it is not invariable; indeed, it is rather the exception than the rule to find it present. In a majority of cases the liver is slightly enlarged, firm in consistency, and hyperæmic. The general impression derived from a consideration of these features is that the liver is an organ which has been working hard; the appearances do not suggest a morbid state. A peculiar lesion of the liver in diabetes has, indeed, been described by Fischer who found in a case of this disease appearances suggesting a growth of fine fibrous tissue running between the cells and columns of cells; this was quite unlike ordinary cirrhosis, either of the fine or the coarse variety, being only visible microscopically and then only on careful observation. After finding this appearance in one case of diabetes Fischer examined all the sections of liver tissue which he had by him and found among them two specimens presenting the same peculiarity. On referring to the notes of the cases from which they were taken he discovered that both of these specimens were from cases of diabetes. In one case which I examined the liver cells in certain places stained badly and here and there I noticed an appearance in these degenerate areas suggestive of the condition recorded by Fischer; it gave the impression of a cement substance between the cells which had somehow been rendered visible. So far this discovery has not been confirmed by other observers and it is difficult to connect it in any way with the causation of the disease as in Fischer's case there was no sign of injury to the liver cells.

Frogs deprived of their livers do not show any sugar in the urine as a result of the operation; nor do they exhibit diminished tolerance for carbohydrate food, with the doubtful exception of lævulose which is said to appear in the urine if administered to the animals. Indeed, the idea that it is some failure in the functions of the liver which is the cause of diabetes is negatived by the fact that in acute yellow atrophy of this organ there is no excess of sugar in the blood or urine; nor is cirrhosis of the liver, however advanced, usually accompanied by glycosuria. Strauss in 38 cases of disease of the liver found alimentary glycosuria as a consequence of the administration of 100 grammes of dextrose in only two instances.

If, then, the liver be at fault its influence must be exerted in the direction of over-activity rather than in that of defective action. We cannot at once exclude the possibility of such a mode of causation. Nevertheless, we must bear in mind that in one form of diabetes, that known as *diabète bronzé*, to which I shall refer again later, there is advanced cirrhosis of the liver; and in one case of ordinary diabetes I myself found a very advanced and apparently active cirrhosis present. Out of 12 necropsies on diabetic subjects which I collected from our post-mortem registers, cirrhosis of the liver was present in two instances. Such a condition is hardly compatible with an excess of function. Further, if we attempt to apply the conception of an over-activity of the liver as an explanation of the cardinal facts of diabetes we shall find it inadequate. It is possible, indeed, to explain the existence of an alimentary glycosuria on the basis of a continual building up and discharge of glycogen by the liver; but it seems quite impossible to harmonise this conception with the internal formation of sugar from the body tissues, to which I have already alluded as the most characteristic feature of the disease, except on the hypothesis that the liver manufactures some poison which causes a breaking-down of the cells. This has not, so far as I know, been suggested. Naunyn's observation that acid intoxication does not occur in cases of hepatic diabetes (glycosuria?) seems to support the view that this organ is not the seat of the primary lesion in true diebetes mellitus, since this acid poisoning is one of the most characteristic phenomena of diabetes.

*The kidneys.*—Attempts to explain diabetes as a disease of the kidneys have been made from the earliest times, as was indeed natural seeing the prominence of diuresis as a feature of the malady. Galen explained diabetes as owing to the kidneys attracting the urine to themselves through the vena cava, though he elsewhere explains the disease as involving a fundamental defect of metabolism (*νέκρωσις ἀμφοτέρων τῶν δυνάμεων ἀλλοιώσεως τε καὶ καθελκτικῆς*). Some of the writers of the eighteenth century also favoured a renal explanation of the disease, speaking of a "laxity of the urinary passages." It is curious that one of the supporters of this latter crude view of the pathology of diabetes should criticise Galen's hypothesis as involving "fertility of imagination rather than solidity of reason."[2] When we examine the actual morbid anatomy of the kidneys in diabetes we find a curiously close resemblance to the conditions met with in the liver. In the majority of cases the kidneys are large, firm, and somewhat hyperæmic; they suggest, as was the case with the liver, that they have worked their hardest to compensate the condition existing in the blood, rather than that they are the organs primarily at fault. In other cases the renal cells exhibit some fatty accumulation, such as is also seen at times in the liver, or they may contain glycogen granules. In still other instances the epithelium of the tubules has undergone hyaline degeneration. In a recent fatal case of diabetes terminating in coma, in which I examined the kidneys along with the other organs—the material being kindly placed at my disposal by Mr. P. L. Daniel, pathologist to Charing Cross Hospital—I found that practically the whole of the tubal epithelium was in a state resembling coagulation necrosis; the cells refused to take on any stain and even the nuclei could not be discovered by any staining methods. The glomeruli appeared to have escaped the morbid process to some extent and the cells and nuclei of the intertubular connective tissue were readily stained and appeared quite normal. No thrombosis of the renal vessels was found to account for this condition which must be looked upon as a result of the intoxication existing in the disease. It is natural to wonder whether the condition of the kidneys can have had anything to do with the coma with which the case terminated. It seems not impossible that in some instances at any rate, coma may be brought about as the result of a vicious circle, the kidneys being first injured by the toxic substances present in the blood which it is their function to eliminate; and this injury finally resulting in an inability to carry on their excretory function, in consequence of which failure a rapid accumulation of the poisons occurs in the system with speedily fatal issue. The sudden onset of coma appears to demand some cause of rapid accumulation of the poisons which are at work and this may perhaps be more easily explained as the result of diminished excretion than by a suddenly increased formation. The occurrence of albuminuria towards the end of cases of diabetes appears to point to the supervention of renal disease as a not very infrequent complication.

So far as the sugar present in the urine is concerned it seems satisfactorily established that the kidneys merely eliminate from the blood the sugar which is poured into it from elsewhere. There would seem to be present normally in the urine a percentage of sugar equal to that existing in the blood. One set of phenomena, and one only, has been pointed to as lending support to the theory of a renal diabetes. These phenomena are those which are seen as the result of poisoning with the substance called

[2] Anonymous Treatise, 1745.

phloridzin. The effect of administering this drug to animals is to produce a condition apparently exactly resembling diabetes, the condition lasting as long as the drug is continued but ceasing on its discontinuance. Not only does sugar appear in the urine but the acid intoxication characteristic of severe diabetes in human subjects is induced and death may occur in a condition resembling diabetic coma. Phloridzin is a glucoside derived from the thorn-apple and it might be suggested that it was itself converted into sugar; but, as a matter of fact, a very small dose of the substance may give rise to the excretion of many times its own weight of sugar. It is generally supposed that the glycosuria of phloridzin poisoning is produced by an increase in the permeability of the renal epithelium, so that it allows an increased quantity of sugar to pass through it. In proof of this explanation is adduced the effect of the administration of the drug to birds. In these an increased sugar content can be produced in the blood, without any sugar appearing in the urine, owing to the power possessed by the avian kidney of retaining sugar and refusing to allow its passage. If phloridzin be given to a bird in such a condition sugar immediately appears in the urine, apparently owing to injury to the renal epithelium. Other substances which injure this structure may produce the same results. The occasional glycosuria seen in cases of Bright's disease has been attributed to a similar injury to the cells of the kidneys; but it appears, on the other hand, that the existence of renal disease—either natural or experimental—may prevent the appearance of glycosuria in phloridzin poisoning (Klemperer, Richter). It is further clear that though injury to the renal epithelium may account for some of the glycosuria seen in phloridzin poisoning it cannot do so for all, since a much larger amount of sugar issues in the urine than normally exists in the blood. The drug must itself give rise to some increased formation of sugar. The acid intoxication coexisting must also be accounted for. It is noteworthy that observers differ in their findings as to the amount of sugar present in the blood in animals poisoned with phloridzin, some finding a condition of glychæmia, others a normal amount of sugar, others again a variable quantity which may exceed or fall short of the normal. It is also difficult to explain the fact that phloridzin may produce glycosuria if tranfused through a kidney locally. Pavy, Brodie, and Siau consider that phloridzin acts upon some substance already existing in the blood and converts it into sugar. It would seem necessary to suppose that it produces excess of this intermediate substance in the blood by its own action.

The administration of phloridzin is followed by intense fatty change in the liver which may be compared with the fatty condition sometimes seen in cases of diabetes. Some very interesting experiments were made by Rosenfeld to determine the source of this fat. By starving animals (dogs) for some time it is possible to get rid of practically all the stores of fat existing in their bodies. If now such starved animals be fed on some fat of a different kind from that normally present in their tissues they store up the new form of fat instead of the ordinary kind and it is possible by chemical tests to demonstrate the difference. If then to an animal thus treated, containing abnormal fat in its adipose tissues, a course of phloridzin be given and the fat in the liver resulting from the treatment be analysed, it is found that the fat of this organ consists of the extraneous fat, not of normal canine fat. The clear inference is that the fat found in the liver is not a fatty degeneration in the ordinary sense, in which the fat is derived, or is supposed to be derived, from breaking-down of the substance of the liver cells, but that the fat is brought to the liver by the blood and is merely ingested by the cells from the fluids surrounding them. As a result of Rosenfeld's experiments, which have been adequately confirmed by other observers, considerable doubt is thrown on the commonly accepted views on fatty degeneration. So far no connexion has apparently been drawn between the fatty condition of the liver and the glycosuria, but it seems not impossible that such a connexion does exist. I shall hope to allude to this side of the question later in my third lecture. In any case the condition produced by phloridzin is almost exactly the same as that seen in diabetes, in respect to the condition of the urine, to the acid intoxication, and to the fatty state of the liver; and arguments drawn from its peculiar features may be applied to the human disease.

*Nervous system.*—The connexion of the nervous system with diabetes has already been alluded to in so far as nervous influences may be effective in determining the onset of the disease. It seems, however, rather the exception than the rule to find any recognisable lesions of this system after death in cases of true diabetes. On the other hand, patients dying from cerebral lesions may exhibit glycosuria up to the time of their deaths. In a certain number of cases classed as diabetes, tumours or other affections of the medulla have been found post mortem. It is at least open to question whether these cases should not rather be described as instances of persistent glycosuria than of diabetes, death being assignable to the cerebral lesion rather than to any nutritional disturbance. Apart from such lesions the changes met with in both brain and spinal cord are most easily explained as secondary changes due to the general wasting and intoxication; such are the atrophy of the convolutions, the widening of the perivascular spaces, the local cysts, the œdema of the membranes, and the dilatation of the ventricles and iter (Dickinson). The localised hæmorrhages sometimes found are analogous to the retinal hæmorrhages characteristic of diabetes and the atrophy and sclerosis of some of the columns of the spinal cord are comparable with the somewhat similar condition which occurs in pernicious anæmia and are due either to malnutrition or to intoxication. The neuritis which may be met with in the peripheral nerves is also almost certainly due to the general intoxication and is comparable with the neuritis produced by alcohol, a substance very closely allied to sugar, by fermentation of which it is generally produced, but it may equally be due to some secondary intoxication or infection rendered possible by the debilitated state of the tissue. Changes in the sympathetic system are also probably secondary and not causal.

*The stomach.*—The causation of diabetes was assigned to the stomach by some of the older writers. Thus, Lister placed the defect in this organ and Rollo, who wrote a careful account of the malady, attributed it to excess of gastric fluid, along with some alteration in the quality of the secretion, by which sugar was formed in the organ. There is, however, little or nothing to connect diabetes with gastric disorders so far as morbid anatomy is concerned. It is true that Joneways and Ortel described a case associated with acute gastritis, but this was almost certainly secondary and due to a terminal infection. In most cases the stomach appears to do its work admirably as is proved by the absence of digestive disturbances in spite of the large amounts of food taken. A form of "dyspeptic glycosuria" has, however, been described by Robin in which the sugar appears in the urine only during digestion. The stomach is found dilated and there is hyper-acidity of the gastric juice; the liver may be slightly enlarged. The patients suffer from neurasthenia and there is phosphaturia along with the glycosuria. According to Robin the condition may pass into true diabetes. It seems more natural to connect the condition with the neurotic condition of the sufferers, since diabetes, or at least glycosuria, is not infrequently noticed to accompany neurasthenia, than to suppose any special form of the disease.

*The skin.*—Apart from the various secondary lesions of the skin due to invasion of pyogenic organisms, such as boils and carbuncles and the local effects of saccharine urine or its decomposition products seen in the neighbourhood of the urethral orifice, there are two conditions of the skin which are said to be specially connected with diabetes mellitus. These are psoriasis and xanthoma. The nature of neither of these is fully understood. Xanthoma appears to be due to a special form of fatty degeneration of the cells of the corium and may, perhaps, be brought into line with the other instances of fatty change already alluded to. Psoriasis has been variously attributed to the presence of an undiscovered organism—as suggested by the ring-shaped lesions of the disease—and to a toxin or dyscrasia. If the former explanation be true—but so far there is no proof of such a cause—its association with diabetes might be similar to that of the pyogenic affections. If, on the other hand, it is toxic it may be due to the same cause which produces the glycosuria or may be produced by the presence in the skin of sugar or some allied substance. It is noteworthy that among 25 cases of psoriasis Nagelschmidt found eight instances of alimentary glycosuria; whereas among patients suffering from other diseases of the skin who happened to be in hospital at the same time no instance of this condition occurred. Pick, however, denies that alimentary glycosuria is frequently found in patients suffering from psoriasis. The question therefore seems still

undecided. It has, however, very little bearing on the nature and manifestations of true diabetes.

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ABSTRACT OF

# The Hunterian Lectures

ON

# THE DISSEMINATION OF MAMMARY CARCINOMA.

*Delivered before the Royal College of Surgeons of England on March 13th, 15th, and 17th, 1905,*

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## LECTURE I.

*Delivered on March 13th.*

MR. PRESIDENT AND GENTLEMEN,—The subject on which I have the honour to address you—the dissemination of a typical and frequent variety of cancer—is a minor one as compared with the great problems of its cause and cure. Nevertheless, so long as early and radical operation remains the only cure for cancer an accurate knowledge of the paths of dissemination is of the first importance. If my treatment of the subject seems to you inadequate I may fairly plead its difficulty and complexity. For the phenomena of metastasis are so complicated that they appear at first sight to be governed rather by chance than by law. My lectures are based on work carried out in the cancer research laboratories of the Middlesex Hospital during the years 1903-04. My warmest thanks are owing to the director of the laboratories, Dr. W. S. Lazarus-Barlow, for his candid and friendly criticism and for advice on difficult points. To my colleagues also, especially to Mr. W. T. Hillier, Mr. W. G. Taylor, and Dr. H. A. Colwell, and to Dr. P. Campiche, my best thanks are due for obtaining for me material from the post-mortem room when surgical avocations forbade me to visit it.

The subject of cancerous dissemination is in a somewhat hazy and indeterminate condition. Invasion of the axillary glands is universally admitted to be an embolic process. On the subject of "regional" dissemination there are two schools of opinion. While certain authors believe that invasion of the pectoral lymphatic plexus occurs by direct cancerous growth along the vessels, others maintain that cancer cells are swept by the lymph stream through the vessels of the pectoral plexus, and that metastases arise from their casual arrest at isolated points. As regards metastases in the internal viscera or at distant points in the parietes (e.g., in the femur), there appears to be only one definite theory of causation—that known as the embolic theory. Some writers, doubtful, perhaps, of the validity of the embolic theory, ignore the subject entirely. Before discussing the more important subject of lymphatic dissemination I shall attempt to clear the ground by considering the evidence on the subject of blood dissemination.

### THE EMBOLIC THEORY.

The embolic theory[1] presumes that particles derived from the primary growth obtain access to the blood and are carried by the force of the circulation to remote districts, where their cells proliferate and produce secondary nodules. There can be no doubt that cancer cells frequently obtain access to the blood, either by passing into it along the thoracic duct or by invading the small veins in the vicinity of the primary growth. Goldmann has drawn especial attention to the latter form of invasion. Mr. Stephen Paget,[2] however, showed that in the simple form stated above the embolic theory is untenable. He pointed out that embolism is necessarily an impartial process to which all the organs are liable. But the distribution of cancerous metastases in the various organs is by no means impartial. Some organs are very frequently invaded, others only rarely. Hence it was necessary to assume that certain organs form a favourable nidus for the emboli which lodge in them while in other organs the embolised particles are destroyed or rendered incapable of growth. Among the salient facts brought forward by Paget in support of this view that tissue predisposition determines the success of embolic invasion were the following. Of 735 cases of cancer of the breast, while the liver showed cancer in 241, only 17 had cancer of the spleen. On the other hand, in 340 cases of pyæmia abscess of the liver occurred 66 times and of the spleen no fewer than 39 times. Again, since cancerous particles reaching the blood must pass through the lungs to gain the systemic circulation it appeared remarkable that these organs showed cancer in only 70 out of 735 cases of cancer of the breast which Paget collected. He further showed that each variety of primary growth has its own special metastatic geography. For instance, while bone deposits are frequent in cancer of the breast and of the thyroid, Gussenbauer and von Winiwarter found not a single instance among 903 cases of cancer of the stomach. So that the tissue predisposition of the different organs must be assumed to vary according to the particular viscus in which the carcinoma originates. Proceeding in his acute analysis of the embolic theory, Paget showed that certain bones are habitually affected in cancer of the breast, while others invariably escape. In the face of this difficulty he was driven to assume that tissue predisposition to cancer is a variable factor as between different parts of the skeleton—that while the humerus, for instance, possesses it in a high degree the radius, equally subject to cancerous embolism, possesses a natural immunity to carcinoma. The embolic hypothesis seems by such a supposition to be strained to breaking point There can be no doubt that in certain rare cases of carcinoma, embolism by way of the blood stream does occur as a process effective in causing metastases. Such a case for example is that of R. Volk, in which a gastric carcinoma, after invading the liver, had produced cancerous pulmonary embolism. Daughter nodules were found in the kidneys, in the brain, and upon atheromatous ulcers in the thoracic aorta. But as a general explanation of metastasis the embolic theory is negatived by a study of metastatic distribution.

Among more recent contributions to the subject of invasion of the blood by carcinoma the most valuable is that of M. B. Schmidt,[3] whose work has not yet received, in this country at any rate, the attention due to its importance. Schmidt examined the condition of the lungs in 41 cases of carcinoma. Rejecting cases where the lungs were healthy or had primarily been invaded by the lymphatics or where the primary mode of invasion was uncertain he obtained 15 cases showing cancerous embolism of the small pulmonary

[1] A full statement of the embolic theory and of its difficulties will be found in Mr. W. Roger Williams's Diseases of the Breast, 1894, p. 207. Mr. A. M. Sheild (Diseases of the Breast, 1898, p. 455) also appears to accept the embolic theory.

[2] Stephen Paget: The Distribution of the Secondary Growths in Cancer of the Breast, THE LANCET, March 23rd, 1889.

[3] M. B. Schmidt: Die Verbreitungswege der Karzinome, Jena, 1903.

arteries. In all these cases the primary growth was situated in the abdomen. Schmidt's general conclusions had better be given in a translation of his own words. It will be seen that he remains an advocate of the embolic theory. "In carcinoma of abdominal organs cancerous embolism of the small arteries of the lungs occurs with unlooked-for frequency and often repeatedly. Only a small proportion of these emboli give rise to metastatic tumours or break through the arterial wall into the perivascular lymphatics. Most of them are either destroyed by organisation of their ensheathing thrombus, or while retaining the power of growth are encapsuled and rendered harmless. They may, however, push forward through the organising thrombus which surrounds them, into the capillaries and small pulmonary veins, and may so give rise to growths in the course of the systemic circulation. All this may happen while to the naked eye the lung remains unaltered." Schmidt's work is a convincing demonstration of the frequency of blood invasion, at any rate in carcinoma of the abdominal cavity. It is worth noting that his 41 cases included two of cancer of the breast, and that in neither of these was he able to demonstrate pulmonary embolism.

In order, however, to establish the embolic theory it is necessary to show that this blood invasion is effective. I would suggest to you that this is rarely the case, that as a rule cancerous epithelium which reaches the blood stream is either destroyed or rendered incapable of growth. If the tissues were arranged in order of specific resistance to cancer, it seems probable that, next perhaps to cartilage, blood would take the highest place. Among Schmidt's 15 cases of cancerous pulmonary embolism only three showed secondary deposits in the lungs visible to the naked eye. In two of these cases miliary nodules were present, while in the third a solitary nodule was present in one lung. Even in the lungs, then, the chances against the macroscopic success of a cancerous invasion by way of the blood appear to be 5 to 1. It may indeed be said that in the twelve cases where naked-eye metastases failed to develop the invasion was recent and would have ultimately succeeded. Such an argument defeats itself, for if blood invasion only occurs at the doors of the post-mortem room, it evidently cannot be an important factor in dissemination.

Schmidt's work shows why cancerous epithelium as a rule fails to colonise the blood stream. The cancer cells excite thrombosis and the thrombus as it organises and contracts destroys them. Goldmann found that thrombosis might even precede the actual cancerous invasion of a vein. He also showed that invasion of the veins near the primary growth might occur in cases which were found post mortem to be entirely free from metastases. Schmidt found thrombotic material round some or all of the cancerous emboli in the lungs in 14 out of 15 cases and round all of them in seven cases. He was able to trace all the stages in the destruction of cancerous emboli of the lungs. In one case particularly there were numerous arterial thrombi apparently the result of cancerous embolism, though at only one point were recognisable cancer cells still present within a thrombus. In the remaining case of the 15 all the cancerous emboli were devoid of thrombotic covering, yet even in this case the only other visceral metastases occurred in the liver and were therefore the cause and not the consequence of the cancerous invasion of the lungs.

In showing that cancer cells in blood excite thrombosis and that the thrombus as it organises usually destroys or renders them harmless, Goldmann and Schmidt seem to have established a fact of first-rate importance and one strongly opposed to the embolic theory. Cancer in lymphatic vessels, as far as I have seen, excites no such thrombosis. Hence it is, no doubt, that although carcinoma often obtains access to the blood almost as early as to the lymph, its dissemination takes place almost entirely by the lymphatics and not by the blood-vessels. It is a significant fact that chorion epithelioma, the only carcinoma certainly known to spread habitually by the blood, ends oftener in spontaneous cure than does any other form of carcinoma. In a series of 188 cases of chorion epithelioma Teacher[4] records four instances of apparently complete recovery following an incomplete operation and eight other cases in which, though hæmoptysis indicated lung metastases, removal of the uterus was successful in restoring the patient to health. It would be easy to adduce other arguments against the embolic theory. I find, for instance, that in 12 per cent. of cases of cancer of the breast the abdomen is invaded by growth, while the thorax, the channel by which on this theory cancer reaches the abdomen, remains free; and that the distal halves of the limbs, where non-cancerous embolism so frequently occurs, are not liable to secondary deposits in cancer of the breast. The theory can, however, only be effectively attacked by constructive criticism. I venture to think that the facts can be better explained on the hypothesis of centrifugal lymphatic permeation which I propose to lay before you.

[4] Teacher: Journal of Obstetrics and Gynæcology, July and August, 1903.

### EXTERNAL (PARIETAL) AND INTERNAL (VISCERAL) DISSEMINATION.

The secondary deposits which occur in cancer of the breast may be considered under two headings: first, those which occur in the parietes and in the limbs—that is to say, in the skin, the subcutaneous tissue, the deep fascia, the muscles, and the bones; secondly, those which occur within the thoracic or abdominal cavities or in the central nervous system. This anatomical division of the metastases corresponds to the two forms of dissemination, parietal and visceral, which occur in cancer of the breast. They usually occur in combination, but that the distinction is a natural and not an artificial one is clearly proved by such cases as those of Arnott[5] and of Walther[6] and by a case of which a model exists in the museum of St. Thomas's Hospital, a photograph of which I shall show you. In these instances there were multiple and widespread metastases in the bones or in the bones and subcutaneous tissues, while the internal organs were free from cancer. The occurrence of such cases—extremely difficult to explain on the embolic theory—suggests that visceral dissemination is a secondary and not invariable consequence of parietal dissemination and that the latter should be the primary object of study. The remainder of this lecture will be devoted to a clinical and statistical study of parietal dissemination.

### PARIETAL DISSEMINATION A CENTRIFUGAL PROCESS.

When a few scattered nodules of cancer are found in the skin near a cancer of the breast, or when the adjacent ribs or the sternum show cancerous nodules, no difficulty is felt in attributing these to local lymphatic spread. But when subcutaneous nodules are present over the greater part of the surface of the body, or when distant bones such as the femora or the cranium are attacked, the hypothesis of centrifugal lymphatic spread is abandoned for that of embolic blood invasion. It appears to me that there is no sufficient reason for this change of attitude. That centrifugal spread may annex by continuity a very large area round a carcinoma is convincingly shown by cases of cancer *en cuirasse*. In a recent paper[7] I have brought forward *primâ facie* evidence to show that nearly all bone and skin metastases, no matter how remote from the primary growth, are due to centrifugal spread by continuity. The facts may here be briefly summarised.

### THE SKIN AND SUBCUTANEOUS FAT.

Velpeau's statement that subcutaneous nodules make their first appearance in the near neighbourhood of the primary growth has never been controverted. And in carefully recorded cases, such as those of Mr. Stanley Boyd[8] or of Dr. Byrom Bramwell,[9] it will be found that as the case progresses they appear at points more and more remote from the primary growth. Fig. 55 in Sheild's well-known book depicts a middle stage of the process of nodule formation. You see the nodules involving a considerable circular area round the growth. They have spread rather more in a vertical than in a horizontal direction and this appears to be a general rule. The next case, that of Dr. H. D. Rolleston,[10] shows extremely numerous nodules. They have indeed involved the greater part of the surface of the body and Rolleston ascribed them to invasion by the blood stream. But the point I would emphasise is that their concentric arrangement round

[5] Arnott: Transactions of the Pathological Society, vol. xix., p. 356.

[6] Walther: Bulletin de la Société Anatomique, 1890, p. 423.

[7] Handley: The Centrifugal Spread of Mammary Carcinoma in the Parietes and its Bearings on Operative Treatment, Archives of the Middlesex Hospital, vol. iii., 1904, p. 27.

[8] Stanley Boyd: Oöphorectomy in the Treatment of Cancer of the Breast, Brit. Med. Jour., Feb. 4th, 1899.

[9] Byrom Bramwell: Edinburgh Medical Journal, July and August, 1904.

[10] H. D. Rolleston: A Case of Multiple Cutaneous Carcinomatosis after Carcinoma Mammæ, Transactions of the Clinical Society, vol. xxxiv., p. 206.

the primary focus is still preserved. The arms beyond the deltoid insertion and the lower limbs beyond the upper point of trisection of the thigh are quite free from nodules. This is not a peculiarity of this particular case. In two cases I have myself observed, in Bramwell's case, and in one or two among the Middlesex records, the distal portions of the limbs have been the only skin areas free from nodules. Thus the area involved in the most extreme recorded cases is only an extension of the circle of invasion so clearly shown in Sheild's case. It will be found, too, that as a general rule the nodules near the primary growth are the largest and those farther away are smaller in size and less closely adherent to the skin. In some rare cases, as in one recently at the Middlesex Hospital of which I show you a photograph, skin nodules may ulcerate. It is noticeable that the ulceration is most marked in the immediate neighbourhood of the primary growth. These facts all support the centrifugal hypothesis, since they show that the oldest nodules lie near the centre of the invaded area of skin, the most recent ones near its periphery.

### THE SKELETON.

The annexed table summarises the experience of the Middlesex Hospital for 30 years with respect to bone deposits secondary to cancer of the breast.

TABLE I.—*Showing the Frequency of Cancerous Deposit or Spontaneous Fracture in 329 Cases of Mammary Cancer at the Middlesex Hospital, 1872–1901.*

| | Bone. | Number of cases. | Percentage of total. |
|---|---|---|---|
| Bones lying wholly or partially within the area liable to subcutaneous nodules. | Sternum ... ... ... ... | 30 | 9·0 |
| | Ribs ... ... ... ... ... | 28 | 8·0 |
| | Clavicle ... ... ... ... | 5 | 1·5 |
| | Spine ... ... ... ... ... | 12 | 3·6 |
| | Cranial bones ... ... ... | 9 | 2·7 |
| | Scapula ... ... ... ... | 1 | 0·3 |
| | Femur ... ... ... ... | 14 | 4·2 |
| | Os innominatum ... ... | 0 | 0·0 |
| | Humerus ... ... ... ... | 9 | 2·7 |
| Bones lying beyond the area liable to subcutaneous nodules. | Radius ... ... ... ... | 0 | 0·0 |
| | Ulna ... ... ... ... ... | 0 | 0·0 |
| | Tibia ... ... ... ... ... | 1 | 0·3 |
| | Fibula ... ... ... ... | 0 | 0·0 |
| | Patella ... ... ... ... | 1 | 0·3 |
| | Bones of hand ... ... ... | 1 | 0·3 |
| | Bones of foot ... ... ... | 0 | 0·0 |

The post-mortem examination of the skeleton is nearly always fragmentary and incomplete and so consequently are the records of osseous metastases. They are trustworthy only for those bones in which extensive cancer usually causes a fracture which attracts the attention of the pathologist. The escape of certain flat bones from cancerous deposit, which the table indicates, is therefore apparent only, while the escape of certain of the long bones from cancer—bones necessarily liable from their shape to spontaneous fracture—must represent a real fact. Making allowances for the fallacies inherent in this table it will be found to indicate certain general laws which point strongly to centrifugal spread and are inexplicable on the embolic theory. 1. The liability of a bone to cancerous metastasis increases with its proximity to the site of primary growth. 2. The bones distal to the knee and elbow escape invasion except in the rarest instances. This photograph, which Mr. Shattock has kindly allowed me to take from a model in the Museum of St. Thomas's Hospital, illustrates the second of these rules. It shows the most advanced case of bone deposits secondary to mammary carcinoma which I have been able to find. There were no visceral deposits. The skeleton had undergone great distortion. The sternum and ribs have sunk until the former almost appears to touch the vertebral column, the whole thorax being flattened out transversely. The pelvis exhibits a precisely similar modification. The right humerus and both femora have undergone fracture. Yet as you can see the legs and forearms have entirely escaped deformity. Thus bone metastases occur only in bones which lie wholly or partially within the area liable to subcutaneous nodules. The reason why the distal halves of the limbs nearly always escape metastases in cancer of the breast is that by the time the parietal tissues have been invaded as far as the knee and the elbow, if not earlier, death intervenes. Rare exceptions may, of course, occur, but only one such exception was found in the records of the Middlesex Hospital for 30 years.

We may now inquire more particularly at what exact point the long bones of the limbs are usually invaded. It has been already stated that only the humerus and the femur are subject to metastases and the scope of our inquiry is therefore limited to those two bones.

### THE FEMUR.

Among 14 cases of bone deposit or spontaneous fracture in one or both femora there were three in which the bone was involved more or less along its whole length. In two of these three cases it is stated that the process was most advanced in the upper two-thirds of the bone. In each of the other 11 cases the pathological condition was present in the upper third of the bone, most often about two inches below the base of the great trochanter. This point of maximum incidence does not coincide with the usual positions of senile fracture of the femur nor with the point of entry of the nutrient artery. The femur appears to be invariably invaded near the base of the great trochanter or along the upper part of the gluteal ridge. Among the eight cases of unilateral cancer of the femur in which it is stated in which breast the primary growth was situated, the fracture was on the same side in six instances and on the opposite side in only two. This preference seems inconsistent with the embolic theory while perfectly consistent with that of centrifugal spread, which would reach the femur of the same side before it had spread sufficiently far to attack the opposite femur.

### THE HUMERUS.

In ten cases secondary deposit or spontaneous fracture occurred in one or both of the humeri. Of the eight separate bones in which fracture occurred it was found at the middle point in four and at varying points through the lower third, the thinnest part of the bone, in the remaining four. The seat of election for cancerous fracture of the humerus is therefore at the deltoid insertion. The infrequency of cancerous deposit in the humerus is probably apparent only. The arm is bound to the side by a mass of axillary growth and splinted by solid œdema. Thus it escapes spontaneous fracture and there is nothing at the necropsy to attract the pathologist's attention. Fracture of the humerus occurred on the same side as the growth in only three instances, while in four cases the opposite humerus broke.

### CENTRIFUGAL SPREAD AS MANIFESTED IN THE SEAT OF ELECTION OF CANCER OF THE FEMUR AND OF THE HUMERUS.

The almost exclusive preference of secondary carcinoma for a point in the femur at or just below the great trochanter and its less marked preference for the middle point of the humerus seems at first sight to offer no particular support either to the embolic theory or to that of centrifugal spread. On consideration, however, it will be seen that in both bones the area invaded is the subcutaneous area which lies nearest to the trunk. If cancer spreads centrifugally from the primary focus along the deep fascia this is exactly what would be likely to happen. It will be shown later that the parietal growing edge of a cancer of the breast does actually lie in this layer. We have now obtained clear indications that the cancerous areas of the parietes in successive stages of the case are circles of ever-increasing radius concentred on the primary neoplasm.

### PRIMARY EXTENSION IN THE DEEP FASCIA INDICATED BY OPERATION RESULTS.

The secondary deposits in the skin and the bones appear scattered and isolated; it is therefore improbable that parietal dissemination takes place *along* these layers. Since the main lymphatic plexus is situated upon, or close to, the deep fascia it is probable that parietal extension takes place primarily in the plane of the deep fascia and that nodules in the skin, the muscles, and the bones are local efflorescences from the cancerous fascial lymphatic plexus. Valuable evidence on this point may be obtained by comparing the results of two operators, one of whom removes a moderate area of skin and undermining the flaps excises the deep fascia much more widely than the skin. The other removes a wider area of skin but does not undermine the flaps and

therefore removes a smaller area of deep fascia. Table II. shows the comparative results obtained.

TABLE II.—*Showing the Comparative Results of Very Wide Removal (a) of Skin; and (b) of Deep Fascia in Breast Cancer.*

| Operator. | Number of cases. | Practice as regards removing. | | Percentage of successes. | Percentage of external recurrences. | Situation of external recurrences. | | |
|---|---|---|---|---|---|---|---|---|
| | | Skin. | Deep fascia. | | | Local recurrence, position unknown. | Pectoral muscles or ribs. | Surrounding skin. |
| | | | | % | % | % | % | % |
| Halsted. | 50 | Very wide removal. | Removal coterminous with that of skin, except towards axilla, where it is greater. | 41 | 21 | — | 6 | 16 |
| Watson Cheyne. | 61 first series. | Wide removal. | Very wide removal. | Upwards of 50. | 18 | 5 | 6·5 | 6·5 |

This table shows that the operator who removes the smaller area of skin yet has a lower percentage of skin recurrences, a result which is unintelligible if cancer spreads along the skin. The operator who removes the smaller area of deep fascia has a higher percentage of skin recurrences, in spite of his wider removal of skin, because growth subsequently extends to the skin from the infected area of the deep fascia which has been left behind.

### THE LYMPHATIC ANATOMY OF THE PARIETES.

[The lecturer next reviewed the lymphatic anatomy of the parietes. He showed that the lymphatics of the skin did not, according to Sappey nor according to his own observations, form beneath the dermis the deep cutaneous plexus described by Arnold. He also showed that probably the main stream of lymph from the breast passes by the retro-mammary lymphatics to the pectoral fascia and thence indirectly to the axillary glands. He continued:]

The pectoral lymphatic plexus is often spoken of as if it were an anatomical entity. It is in reality merely a conventional subdivision of the deep fascial lymphatic plexus, a network of intercommunicating channels which invests the entire body. This great plexus is divisible by the median plane of the body and by horizontal planes passing through the clavicle and through the umbilicus into six catchment-areas, three on either side, draining respectively into the cervical, the axillary, and the inguinal glands. Within each area a special set of trunk lymphatics arises from the plexus and converges on the corresponding set of glands. The line, or rather zone, separating adjacent areas may be called the lymphatic water parting and is anatomically a zone of narrow tortuous channels nowhere traversed by trunk lymphatics—a region consequently where the lymph stream is at its feeblest and where even very fine particles are liable to be arrested. The general idea, then, which we have obtained of the parietal lymphatic system is that of a vast horizontal network of fine channels, coextensive with the surface of the body and receiving above numberless fine vertical tributaries, which convey to it the lymph from the skin and its appendages. Among the latter we must include the breast. From this great plexus the lymph is conveyed by six sets of lymphatic trunks, each draining a definite area, to the cervical, axillary, or inguinal glands. On its deep aspect the fascial plexus communicates by fine anastomotic vessels with the muscular and periosteal lymphatics. We are now in a position to trace the advance of carcinoma along the ramifications of the great parietal lymphatic plexus. The subject may be divided as follows: (1) dissemination within the limits of the breast; (2) invasion of the underlying pectoral fascia; (3) embolism of the axillary glands; (4) retrograde embolism produced by a reflux lymph stream; and (5) centrifugal lymphatic permeation.

### DISSEMINATION WITHIN THE LIMITS OF THE BREAST.

Much of the literature of cancer of the breast centres on this subject. Since I can add nothing to the valuable and well-known work of Langhans, of Heidenhain, of Stiles, and of many subsequent authors on this subject, I do not propose to deal with it. Langhans was the first to observe that the small lymphatics of the breast are invaded early and widely far beyond the infiltrating edge of the primary growth. It remains, however, still uncertain whether this lymphatic invasion is embolic or proceeds by continuous growth along the vessels. Stiles,[11] who examined over 100 breasts removed by operation, shared the embolic view of Langhans. My investigations in the extra-mammary tissues, where the conditions of observation are perhaps more favourable, show continuous growth of cancer along the lymphatics (Lecture II.), and it seems unlikely that the mode of spread within the breast is by a different method.

### EXTENSION OF GROWTH TO THE PECTORAL FASCIA.

Heidenhain,[12] in 12 out of 18 cases examined, found cancerous lymphatics running from the breast to the pectoral fascia. His observations showed that the cancer generally advanced along these vessels, and along those of the pectoral lymphatic plexus, by a process of continuous growth, less often by embolism. It is an important fact that cancerous lymphatics may be found in the pectoral fascia before the growth has become adherent to the muscle, an observation which I was able to confirm in a recent case. Thus in an early stage, prior to adhesion to the skin and even before adhesion to the pectoral fascia, an area of the deep fascial (pectoral) lymphatic plexus which underlies the growth shows cancer-filled lymphatics. I shall be able to show that the parietal metastases of breast cancer are especially frequent and widespread, not on account of any special cancerous proclivity of the skin in the subjects of breast cancer but because of the intimate connexion which Heidenhain proved to exist between the lymphatics of the breast and those of the great fascial plexus.

### EMBOLISM OF THE AXILLARY GLANDS.

It is probable that embolic invasion of the axillary glands cannot occur until microscopic invasion of the pectoral fascia has taken place. Embolism of the axillary glands is probably secondary to the growth of cancer along the meshes of the pectoral lymphatic plexus which Heidenhain observed. As soon as cancer cells intrude from the smaller vessels into a trunk lymphatic they are swept by the stream to the axillary glands. After long delay they penetrate these glands and the supraclavicular glands and so attain the blood stream. The route we have been tracing is usually regarded as the main avenue of dissemination. So, no doubt, it would be but for one factor—the destructive action of the blood on cancerous epithelium which was demonstrated by Schmidt. The peculiarities of metastatic distribution show that cancer cells which gain access to the blood are reduced to impotence.

### RETROGRADE LYMPHATIC EMBOLISM.

There is, however, another route by which dissemination might occur. As soon as the lymphatic glands are obstructed by growth a reflux lymph stream must pass across the middle line to the opposite axillary glands, upwards to the cervical, or downwards to the inguinal glands. Very great stress has by some authors been laid on this factor in dissemination. But on account of the valves it cannot take place to any extent in trunk lymphatics. Moreover, towards the periphery of each lymphatic area the trunks break up into fine plexuses. They are incapable, therefore, of conveying cancer cells to adjoining areas, unless these cancer cells can pass through networks of small lymphatic vessels. And this appears never to happen, for, as will appear in Lecture II., breast cancer shows a definite parietal growing edge without outlying embolic foci. And the opposite axillary glands, the opposite breast, or the inguinal glands, are never found to become cancerous early in the case, as should occasionally happen if cancer cells can reach them embolically from other lymphatic areas.

### PERMEATION OF LYMPHATIC PLEXUSES.

We have seen that neither the direct nor the reflux lymph stream is capable of transporting cancer particles to points lying outside the lymphatic area in which the primary

[11] Stiles: On the Dissemination of Cancer of the Breast, Brit. Med. Jour., 1899, vol. i., p. 1452.

[12] Heidenhain: Ueber die Ursachen der Localen Krebsrecidive nach Amputatio Mammæ, Archiv für Klinische Chirurgie, 1889, p. 97.

growth originated. The direct lymph stream is filtered of its cancer cells at the first set of glands; the reflux stream is similarly filtered in the fine anastomotic plexuses through which it must pass to adjoining lymphatic areas. Thus the lymph stream is ineffective as a means of *general* dissemination; it is effective only within the limits of the lymphatic area where the primary focus is situated. In whatever direction the cancer cells attempt to leave that area they find an effective filter blocking the way. How to overcome the resistance thus interposed and to reach other lymphatic areas is the essential problem of dissemination. In connexion with this problem I would like for a moment to draw your attention to the behaviour of porcelain filters with respect to micro-organisms. Mr. Kenneth Goadby informs me that certain bacteria which cannot by any degree of pressure be forced through porcelain filters will nevertheless in a few days, if left within such a filter, grow through its pores and infect its outer surface. It is similarly by the aid of their own proliferative power that cancer cells succeed in traversing the meshes of the lymphatic filter in which they are imprisoned. It is, of course, well known that this is the mode by which cancer cells pass through lymphatic glands. But this centripetal route of invasion is relatively unimportant because it leads finally to the blood where the cancerous foci usually disappear harmlessly. In a precisely similar way, by actual centrifugal growth along the meshes of the lymphatic plexuses which are in relation to the primary neoplasm, cancer cells ultimately succeed in penetrating the fine anastomotic plexuses which, at the periphery of the lymphatic area concerned, bar the way into surrounding lymphatic areas. To this process of actual cancerous growth along the fine lymphatic vessels I have ventured to attach the name lymphatic permeation or simply permeation. It appears to me to be the master process of dissemination. For whereas in attempted embolic dissemination *via* the glands the migrating cells are cast away in the blood, cancer cells which migrate by way of the peripheral anastomotic plexuses simply pass into the lymphatic vessels of adjoining areas without changing their conditions of life. Advancing in this way, slowly and centrifugally from one lymphatic area to the next, permeation may conceivably bring about the impregnation of the entire lymphatic system with cancer, provided only that the cancer cells possess sufficient proliferative power. An approximation to this condition is apparently indicated in the cases where subcutaneous nodules or bone deposits spare only the distal portions of the limbs.

### PERMEATION AS SEEN ROUND PLEURAL IMPLANTATION GROWTHS.

In order to make clear what I mean by permeation it will be well to study a concrete instance of the process. In many cases of mammary carcinoma cancer cells obtain access to the pleural cavity and, gravitating through it, implant themselves at some point on the serous surface. Soon small pseudo-papillomatous secondary growths are seen projecting into the pleural cavity at the point of implantation. If now a piece of the pleural membrane be stripped off and held up to the light each of these growths will be seen surrounded by an opaque, slightly thickened, more or less circular area of pleura, perhaps an inch or two in diameter, which presents to close examination a network of white lines just visible to the naked eye. The microscope shows that these lines are the vessels of the sub-pleural lymphatic plexus filled by lines of cancer cells. In the pleura and in certain other situations, under the misleading name of "lymphangitis carcinomatosa," permeation has long been recognised and described. Borst[13] regards this process as peculiar to the serous membranes, the diaphragm, the lungs, and the liver, and does not describe it as playing any important part in dissemination. The name "carcinomatous lymphangitis" is evidently a misnomer. It would be equally correct to describe a preparation showing lymphatics injected with mercury as one of mercurial lymphangitis. In both cases the process is primarily mechanical or at any rate not inflammatory. The mercury and the cancer cells, under the influence of pressure, follow the lines of least resistance. But since in the case of the cancer cells this driving force is an internal pressure resulting from their own proliferation it is not quite correct to speak of cancerous injection of the lymphatics; the process of permeation is rather one of tendril-like cancerous growth along the lymphatics. The anastomotic plexuses which divide the lymphatic system of the body into separate areas and form effective barriers against embolic dissemination are powerless to check the advance of permeation. So far as this process is concerned the whole lymphatic system is a single network of accessible channels and by its slow centrifugal extension the whole body might ultimately be impregnated by cancer cells. My main task in succeeding lectures will be to describe the details of this process, to show why its importance has escaped observation, and to justify my belief that it is the master process of dissemination.

[13] Borst: Die Lehre von den Geschwülsten, Wiesbaden, 1902, vol. ii., p. 712.

# The Lettsomian Lectures

ON

# THE MENTAL DISORDERS OF DECAY.

*Delivered before the Medical Society of London on Feb. 6th and 20th and March 6th, 1905,*

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## LECTURE III.[1]

*Delivered on March 6th.*

MR. PRESIDENT AND GENTLEMEN,—The first group of cases I have to consider has been well called by Clouston postponed idiocy. More recently we have had other names, insanity of adolescence and dementia præcox. Secondly, I shall have to consider disorders of malnutrition, toxic states such as brain syphilis, and general paralysis of the insane; and, lastly, I shall have to describe true cases of senile dementia.

Postponed idiocy has been called developmental and it must be remembered that the same initial mental or brain disease may lead to different exhibitions according to temperament, environment, and education. Youth is not on the side of the neurotic; if in a youthful patient there is strongly marked inheritance of neurosis the danger is still greater. A large number of these cases are simple in their onset. There are a number of boys and a yet larger number of girls who break down at adolescence. Clouston confirms my experience that the boys who break down at adolescence are less hopeful than the girls who break down under similar conditions. There seems to be a definite class of individuals with a capacity to attain a certain stage; their nutritive side is all right, but as soon as the stress of sexuality comes, altruism, with love and allied emotional states, then these individuals have not the power to stand it and accordingly they break down. Very many of these cases predisposed by heredity have with the onset of pubescence some other form of disturbance, and one which deserves further consideration—namely, febrile attacks. I have seen patients, aged 15 or 16 years, said to be doing hysterical and stupid acts, whose friends stated that from infancy they had had every year or two a feverish attack, their temperature running up to 101°, 102°, or 103°, or even 104° F., but without any recognisable cause. There seems to be a febrile condition that not infrequently ends in disturbance of the mind. Then there is the subject who is predisposed by over-training, mental or muscular, or both. An individual whom I have seen recently was a double Blue and a double first, and the result is dementia. It is a case of overstrain and over-training in a neurotic person. A certain number of cases break down as a result of shock. One has seen cases in which there has been a suspicion of criminal assault, and after that there have been hysterical symptoms, maniacal or hypochondriacal disorders, followed by permanent weak-mindedness. Undoubtedly in some of these cases there has been an assault

[1] Lectures I. and II. were published in THE LANCET of Feb. 18th (p. 409) and March 11th (p. 630), 1905, respectively.

or fear of assault, or a shock which has been the starting point of the disorder. Giggling is a most important sign, it is a serious and grave symptom if it be habitual. Among the earlier symptoms leading to dementia are hystero-maniacal attacks associated with love or fancied love affairs, and in some there is a tendency to make bad poetry and to go to fancy dress balls in such characters as that of Romeo, but such hystero-maniacal symptoms may pass off.

Sexuality is an important element in these cases. Some are still classified in text-books on insanity as cases of masturbatic insanity. There is no doubt about it that a large number of these cases, both girls and boys, are masturbators, and it is a question how much the masturbation has produced the mental disorder or how much the mental disorder has produced masturbation. It is a symptom of the gravest portent, it is one which is not only a symptom but is a cause of further decay. There is also the symptom of antipathy to parents. One of the commonest conditions which the consulting physician is asked about is when a son who has been obedient and docile and all that is desirable up to 15 or 16 years of age becomes violent and takes a strong dislike to his parents. Following along the same lines one comes to religiosity and love of mysticism. These individuals develop all sorts of religious cranks and phases, they believe themselves to be apostles, to have missions, and they take naturally to spiritualism and occult sciences. Another type leading to the same end is the hypochondriacal one, in which the individual believes that he has some malady. Here again it is associated not infrequently with sexuality. He believes that his life and strength are running away with his emissions and he passes into a state of hypochondriasis which does not tend so rapidly to dementia as does the hysterical or emotional disorder. The hypochondriac believes that other people influence him, that they are poisoning him, that his skin is affected, and that people are giving him diseases.

It is interesting when looking at the sensory disorders of these young patients who pass into dementia that hallucinations of the senses are common, and it is noteworthy that the hallucinations should be very similar to those met with in senile cases. Girls complain of people coming into their bedrooms, boys complain of all sorts of tricks and phantasmagoria. The only time I hear phantasmagoria spoken of is by patients of this class. They say that things are made to pass in and out of their room and made to move before them. Hallucinations of smell are commonly associated with these disorders. In nearly all cases showing a tendency to dementia we have dilated and mobile pupils. There is also an extraordinary tendency to degraded habits; in a large number of these cases not only is there masturbation but there are a wetting of the bed and passing of the faeces anywhere. Nothing strikes me as more grave than when I am told that a patient laughs to himself, talks to himself, and also is inclined to lie in bed and be absolutely indolent. Another practical point is that such persons spend hours in the water-closet. Another type is the individual who seems to be always washing, and in many cases this tendency to frequent washing is associated with hallucinations of two senses, they will tell you there is an unpleasant smell about their hands and that they have some unnatural feeling in the skin.

Wilfulness recurring in children who have been previously healthy and normal is a serious matter and when associated with any of the other symptoms, such as laughing to themselves, solitariness, and lying in bed, the prognosis is bad. Although a certain number of cases get well for a time one has to remember that there is grave danger in recurrence, and if there is rapid recurrence the danger is increased. Some cases begin hysterically, others begin hypochondrically, some are associated with recurring attacks of mania, or of melancholia, or of the hysterical emotional type, others are progressively demented from the first.

So one has to recognise that there are many cases starting in different ways, but generally associated with hereditary weakness and coming on at the time of sexual development. Very different symptoms may lead to mental weakness of a permanent kind. Remember, on the other side, that a large proportion of these cases recover, but I cannot say that my experience agrees with that of Clouston who would make more than half of them recover. My experience would rather be that half the cases recover once, but for permanent recovery I do not think more than 30 per cent. are permanently cured.

I shall not have time to go through the whole of my subject, so I will take now the third part of it, the mental disorders of senility. Metchnikoff on the scientific study of old age began by saying that unicellular organisms are immortal. Real old age is a phase of existence in which the natural forces abate never to be renewed. Old age is relative, not only in the individual, but in classes of animals; birds, according to him, ought to live longer than mammals. Metchnikoff is a man with an idea that the length of life of an animal is in direct relationship with the smallness of the big intestine. He points out, in his very careful studies, that the large intestine is a very important thing for animals, they have to run for their lives, but they run for their lives at the cost of their longevity. A general fibroid increase in the toughness of meat is one of the most characteristic marks of old age. Besides atrophy and degeneration of the parenchymatous elements there is a profound change in the framework of the connective tissue which supports the organs. A man is as old as his arteries. In senile atrophy the same condition is always present, atrophy of the higher and specific cells of a tissue and their replacement by hypertrophied connective tissue. A conflict takes place between the higher elements and the simpler or primitive elements and the victory is signalised by a weakening of the special functions of an organ in the brain by a special weakening of the intellect. Now comes a question of great importance from the pathological point of view. The function of phagocytes is that of voracious scavengers. These scavengers play an important part in bringing about the senile decay in the brains of old persons. It is known that a number of nerve elements are surrounded and devoured by these cells. The senile decay is chiefly brought about, in the materialistic point of view, by this process. The changes are easily seen, as has been pointed out, in the changes from dark hair to white. A similar process can be watched in the nervous tissues and can be very readily observed in the nervous tissues of subjects of general paralysis of the insane. Metchnikoff goes one step further and says that if the phagocytes are the cause of old age, why not get an antitoxin which will so affect them that we may live for ever? You have to remember that old age is, after all, relative, and if there has been syphilis with or without alcohol there will be a hastening of senility, a hastening of decay. Then it has been pointed out by Italian observers and supported by some English observers that associated with the development of these phagocytes there are constantly met with intestinal changes which have been picturesquely described, the flora of the great intestine.

And now as to ordinary senility, is it normal, is it necessary? Is it necessary that any one of us who may live to 90 years of age must necessarily suffer from senility? No; it is not necessary. I believe that all insurance offices recognise that heredity in age is a thing to consider, that people whose parents have lived to the age of 80 or 90 years can hardly kill themselves even by drunkard's habits, and it is certain that there is a transmission of senile tendencies. The senile mental troubles may be of similar type in the same family. It is important also to remember that senile parents may give rise to the nervous symptoms, although they have not shown any mental disorder till they were advanced in years. Thus if they beget children late in life, those children are likely to be unstable. The majority of cases of senile weak-mindedness are associated not with brain change alone and simply, almost always there are some other troubles contributing, they are not infrequently attended with vascular, cardiac, renal, or other disorders.

In many cases the senile dementia or weak-mindedness is but an exaggeration of the habits and ways of the man. A man who has been very careful all his life is likely to become when he breaks down mentally in later years a collector or a miser. The individual who has been Puritanical is likely to believe that his soul is lost. The individual who has been inclined to follow quacks and take pills is likely to develop a hypochondriacal symptom with ideas of obstruction of the bowels. The temperament which has been a distinguishing characteristic of the man through life is with him still, but as he gets older he loses control and therefore the characteristic becomes more marked. There is a better prognosis in cases over 60 years of age than in cases under 16 years, and it is perfectly certain that a large number of the insane over 60 years old get perfectly well. Some of these cases of acute mental disorder of whatever type may recover completely. A larger proportion only recover partially and very many pass

into one or other degree of mental weakness. It is interesting to remember, too, that these senile mental symptoms may be warning symptoms of something much more grave; it is not an uncommon thing for a person who has signs of mental decay to have an apoplectic seizure which closes the scene.

The mental symptoms which are to be looked for as chiefly associated with mental decay in senility are loss of control, loss of faculty, and loss of flexibility. One of the most characteristic marks of senility is defect of memory. Losses of memory as age increases are marked and the chief characteristic is defect of recent memory, the things of the long past are remembered with extreme accuracy of detail. Sleeplessness is another of the symptoms most characteristic of senile change and of course verbosity is another.

One of the earlier marks of senility is emotion, tears come more readily and there is a greater tendency to impulse. Then we meet with the development of the sexual passion: in youth it is overpowering desire, in the old man it is defective control. There are one or two points which have never been cleared up in relation to senile persons; with certain defects there seems to be an increased power. Many an old man who has not been able to touch beer or bread and cheese for lunch for half or a quarter of a century will, when he is 70 or 80 years old, be able to eat or drink anything. I believe it is a deadening of the whole bodily condition and is associated with oncoming weakness. In regard to sexuality, just as masturbation is the characteristic of the adolescent, so with the old man it is very common to get indecent assault or indecent exposure.

It is remarkable that the defects of memory associated with old age are very similar to those connected with alcohol. An old man, like an old alcoholic, will talk of having been to his offices that morning though he has never left his chair and will say he is going home when he is actually living in his house. There are hallucinations connected with senility similar to those associated with youth. There are hallucinations of sight and smell and in several cases hallucinations of smell constitute marked wanderings before an apoplectic seizure. Hallucinations of sight are sometimes extraordinarily vivid.

One sees senile mania, senile melancholia, senile general paralysis of the insane, with nearly all the symptoms of general paralysis, the exaltation, the restlessness, the muscular tremors, and the like. Then there are the tendency to the development of miserly habits and the tendency to become a recluse. It does not follow that all misers are weak-minded, but there are a certain number of misers who are undoubtedly weak-minded. I look upon senile mental disorders as not necessary complements of age; age may be accelerated by disease or by the mode of living—in fact, old age is relative.

## AN INVESTIGATION INTO THE CAUSATION OF PUERPERAL INFECTIONS.[1]

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THE bacteriology of puerperal infections has been the subject of many special investigations since the publication in 1880 of Pasteur's classical paper on the occurrence of streptococci in the blood and discharges of patients with puerperal fever; but inasmuch as the precise causation of the various forms of puerperal fever cannot yet be said to have been completely worked out, and as there have been certain discrepancies between the published results of different workers in this field of pathology, we commenced some four years ago a systematic investigation into the causes of fever following on either miscarriage or labour at full term. And whilst our investigation is by no means completed, yet we think that some of the results which we have already obtained are sufficiently definite to justify us in making the present communication to the Obstetrical Society.

*The cases investigated.*—In the first place it will be well to refer to the general character of the material with which we have worked and to the methods which we have followed in our investigation. The results which we shall quote were obtained from the examination of 54 cases in which fever, slight or severe, occurred after either miscarriage or labour at full term, six of the cases coming under the former description. In each one of the 54 cases a detailed bacteriological examination of the contents of the uterus was made and all bacteria present on our primary culture tubes were isolated in pure culture and studied. In nearly all of these cases a similar examination of the secretion found in the vagina was also made. With the view of obtaining certain other information we have made a complete bacteriological examination of the contents of the uterus in 12 cases after normal labour and during a normal puerperium. We have also examined the secretion in the cervical canal of 30 women who showed no signs of pregnancy, being selected from amongst patients who presented themselves at the out-patient department of the Chelsea Hospital for Women complaining of vaginal discharges.

*Method of bacteriological examinations.*—In the cases in which we examined the contents of the uterus the following method was employed as a rule. A glass tube shaped like an ordinary intra-uterine douche tube served as the sheath of a piece of stout copper wire which carried a plug of sterilised cotton wool at its end. The top opening of the glass tube was plugged with cotton wool, which was tied back over the glass, so as to form a sort of cap. The string which was used for tying on this cap was wound once or twice round the glass tube and by pulling on it the cotton wool cap could be withdrawn after the upper end of the glass tube had been introduced within the cervical canal. The lower end of the glass tube was closed by a plug of cotton wool packed round the copper wire. The apparatus was then placed in a metal case and sterilised by heat. After sterilisation the end of the glass tube with its cap of cotton wool was dipped into a heated mixture of hard paraffin, vaselin, and thymol, and as soon as the mixture had set the apparatus was replaced in its sterilised metal case, where it remained until used.

In taking a sample of the contents of the uterus the glass tube was introduced well within the os externum, the cotton-wool cap was then withdrawn from the uterus by means of the attached string, and the copper wire with its plug of sterilised cotton wool was pushed forward until it touched the fundus. The wire was then withdrawn well within its sheath, and the glass tube was removed from the patient. The upper end of the tube was then plugged and flamed and cultures were made in the laboratory as soon as practical. From each "swab" of cotton wool cover-glass specimens were prepared and examined and the following series of culture tubes were inoculated: two peptone-agar tubes, two glycerine-agar tubes, two tubes of inspissated horse serum, two tubes of nutrient gelatin, and two tubes of peptone-beef broth. Of these tubes three were incubated anaerobically, tubes of broth and agar at 37° C., and a gelatin tube at 20° C.; the remaining tubes were incubated aerobically at 37° C., except the second gelatin tube, which was kept at 20° C. By making smear cultures successively over the surface of tubes of sloped media it was usually possible to isolate the various bacteria present in pure culture, but whenever necessary the growth obtained on these tubes was plated out. In a few cases in which the examination was made some considerable time after delivery and in which it was not practicable to use the intra-uterine tube, an ordinary "swab" was passed into the uterus, after every possible precaution had been taken to avoid any contamination below the external os. When examining the vaginal fluid from puerperal women every precaution was taken to get a true sample of the contents of the canal uncontaminated by vulval secretion.

In order to anticipate criticism we may point out that we did not, as a rule, prepare special culture media with the view of obtaining growths of micrococcus gonorrhœæ. When attempting to isolate this organism from pus or from

[1] A paper read before the Obstetrical Society of London on Jan. 4th, 1905.

TABLE I.—CASES OF FEVER AFTER MISCARRIAGE OR LABOUR AT FULL TERM.

*A*—CASES TERMINATING IN DEATH. *B*—CASES OF SEVERE FEVER WITH RECOVERY. *C*—CASES OF SLIGHT FEVER WITH RECOVERY.

*A—Cases terminating in Death.*

| No. | Labour at full term or miscarriage. | Age. | Bacteriological examination of uterus. | Bacteriological examination of vaginal discharge. | Date after confinement on which bacteriological examination was made. | Onset of symptoms after confinement. | Result. | — |
|---|---|---|---|---|---|---|---|---|
| 1 | Full term, eleventh pregnancy. | — | Streptococcus (pure culture). | No examination. | During sixth week. | Fever commenced on fifth day. | Death during seventh week after delivery. | *History.*—Retained membranes; temperature 105° F. and offensive purulent discharge from the cervix (sixth week); symptoms of peritonitis and pleuritis before death. No special treatment. No examination after death. |
| 2 | Full term. | — | Streptococcus pure culture). | No examination. | On twenty-second day. | Fever commenced on seventh day. | Death. | Uterus enlarged (twenty-second day); large sub-mammary abscess (containing streptococci in pure culture). |
| 3 | Full term, sixth pregnancy. | 28 | Streptococcus and bacillus coli communis. | Streptococcus and bacillus coli communis. | After death (cultures taken 13 hours after death). | Fever commenced on third day. | Death on sixth day after delivery. | *History.*—High intermittent fever; "typhoid" condition and collapse. *Necropsy.*—Cultures taken from the heart blood, spleen, and peritoneal sac all showed streptococci in pure culture. |
| 4 | Miscarriage (probably after an illegal operation), third pregnancy. | 23 | Streptococcus and bacillus coli communis. | Streptococcus and bacillus coli communis. | After death (cultures taken 12 hours after death). | Fever commenced second day after miscarriage. | Death on sixth day after miscarriage. | *History.*—Miscarriage a few days before admission into hospital; admitted in "typhoid" condition and moribund; died before reaching ward. *Necropsy.*—Cultures taken from heart blood, spleen, lungs, and peritoneal sac all showed both streptococci and bacillus coli communis. |
| 5 | Full term, first pregnancy. | 30 | Streptococcus and bacillus coli communis. | Streptococcus and bacillus coli communis. | After death (cultures taken 18 hours after death). | Fever commenced on seventh day after labour. | Death on twenty-first day after delivery. | *History.*—Placenta prævia and post-partum hæmorrhage; thrombosis of the left femoral vein with swelling of the leg noticed on the seventh day; high irregular fever and attacks of dyspnœa. *Necropsy.*—Cellulitis of the left broad ligament; thrombosis of the left common iliac vein. *Bacteriological examination.*—Cultures taken from the cavity of the uterus, from the vagina, and from the thrombus in the vein all showed both streptococci and bacillus coli communis. |
| 6 | Full term, third pregnancy. | — | Streptococcus and bacillus coli communis. | Not examined. | Ninth day. | Fever commenced on second day. | Death on eleventh day after delivery. | *History.*—Forceps used; lochia offensive and temperature 104° F. (ninth day). Anti-streptococcic serum used just before death. No examination after death. |
| 7 | Full term, sixth pregnancy. | — | Streptococcus and bacillus coli communis. | Not examined. | Sixth day. | Fever commenced on second day. | Death on seventh day after delivery. | *History.*—Lochia offensive; temperature 104° F. (sixth day); treatment, intra-uterine douching and exploration; antistreptococcic serum used just before death. |
| 8 | Premature labour, fourth pregnancy. | 33 | Streptococcus, bacillus coli communis, and staphylococcus pyogenes albus. | Bacillus coli communis and staphylococcus pyogenes albus. | Tenth day. | Fever commenced on seventh day. | Death on fourteenth day after delivery. | *History.*—Premature labour a few days before admission into hospital; admitted after sudden attack of hemiplegia, high fever. *Necropsy* eight hours after death. Placental site necrotic; ulcerative endocarditis; cerebral embolism with meningeal effusion. *Bacteriological examination.*—Cultures taken from the heart blood, spleen, and meningeal fluid all showed streptococci in pure culture. |
| 9 | Full term, fifth pregnancy. | 34 | Streptococcus, bacillus coli communis, and staphylococcus pyogenes albus. | Streptococcus, bacillus coli communis, and staphylococcus pyogenes albus. | Fifteenth day. | Fever commenced on fourth day. | Death on nineteenth day after delivery. | *History.*—Retained placenta, exploration and removal, lochia suddenly ceased; high intermittent fever and vomiting. *Necropsy* six hours after death. Uterus enlarged and softened; uterine mucosa necrotic; peritonitis; spleen, liver, and kidneys engorged and softened; heart muscle softened; disseminated lobular pneumonia; excess of fluid in peritoneal sac. *Bacteriological examination.*—Cultures taken from the heart blood, spleen, and peritoneal sac all showed streptococci in pure culture. |
| 10 | Full term (? eighth month). | 37 | Streptococcus, bacillus coli communis, and another bacillus (anaerobic). | Not examined. | Third day. | Fever commenced on second day. | Died on fifth day after delivery. | *History.*—Child, membranes, and placenta born before arrival of medical man; child dead, but movements noticed five days previously; temperature (second day) 104° F.; uterus explored and placental fragments removed; temperature (third day) 100°; vaginal discharge offensive; 102° (fourth day); antistreptococcic serum given on fourth day; laceration of the cervix and perineum. Patient had undergone an anterior nephrectomy 12 months previously; the operation wound had never quite closed and was still discharging pus. |
| *a* | *b* | *c* | *d* | *e* | *f* | *g* | *h* | *i* |

| a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|
| 11 | Full term, first pregnancy. | 24 | Micrococcus pneumoniæ, bacillus coli communis, and staphylococcus pyogenes albus. | Not examined. | Tenth day. | Fever commenced on third day. | Death on fifteenth day after delivery. | *History.*—Contracted pelvis, delivery by forceps, temperature from 103° to 105° F. (tenth day); vomiting; lochia offensive. *Necropsy* (incomplete).—Pelvic peritonitis and cellulitis of the right broad ligament; a portion of the placenta was retained; pleuritis; no pneumonia. (See "A Case of Primary Infection of the Puerperal Uterus by Diplococcus Pneumoniæ," Foulerton and Bonney, Transactions of the Obstetrical Society, 1903.) |
| 12 | Full term. | — | Micrococcus pneumoniæ, bacillus coli communis, and staphylococcus pyogenes albus. | Not examined. | Eighth day. | Fever commenced on sixth day. | Death on ninth day after delivery. | *History.*—Patient was admitted into hospital on the seventh day; she could only talk in Italian and little in the way of history could be elicited. *Necropsy.*—Placental site necrotic; cloudy swelling of the kidneys; no pneumonia. *Bacteriological examination.*—The same three species of bacteria isolated from the uterus during life were obtained on cultures taken from the uterus after death. *Histological examination.*—Sections made through the placental site showed necrosis of the superficial layer of tissue, inflammatory infiltration below this, and numerous well-marked encapsuled diplococci. |
| 13 | Full term, third pregnancy. | — | Diplococcus (+ Gram) pure culture. | Diplococcus (1) and staphylococcus pyogenes albus. | Eighth day. | Fever commenced on seventh day. | Death on fourteenth day after delivery. | *History.*—Post-partum hæmorrhage; retained membranes; lochia natural; temperature 105° F. (eighth day). No examination after death. |
| 14 | Full term. | — | Diplococcus (– Gram) pure culture. | Not examined. | Twelfth day. | Fever commenced on seventh day. | Died on fifteenth day after delivery. | *History.*—Forceps case; temperature 105° F. (twelfth day). No examination after death. |

*B—Cases of Severe Fever with Recovery.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | Full term, fifth pregnancy. | — | Streptococcus (pure culture). | Streptococcus (pure culture). | Fifth day. | Fever commenced on third day. | Recovery on seventh day. | *History.*—Fifth day lochia normal; temperature 104° F.; exploration of uterus, removal of placental fragments, and douching of uterus. |
| 16 | Full term, eighth pregnancy. | — | Streptococcus (pure culture). | Streptococcus and bacillus coli communis. | Sixth day. | Fever commenced on fourth day. | Recovery on seventh day. | *History.*—Sixth day lochia offensive; temperature 104° F.; no special treatment. |
| 17 | Full term. | — | Streptococcus (pure culture). | Streptococcus and bacillus coli communis. | Sixth day. | Fever commenced on third day. | Recovery on seventh day. | *History.*—Sixth day temperature 103° F.; treatment: intra-uterine douches. |
| 18 | Full term. | — | Streptococcus (pure culture). | Streptococcus and bacillus coli communis. | Fifth day. | Fever commenced on third day. | Recovery on sixth day. | *History.*—Child born dead and macerated; fifth day lochia natural; temperature 104° F.; exploration of uterus, removal of placental fragments, and intra-uterine douches. |
| 19 | Full term, fourth pregnancy. | — | Streptococcus (pure culture). | Streptococcus, bacillus coli communis, and staphylococcus pyogenes albus. | Sixth day. | Fever commenced on third day. | Recovery on twenty-fourth day. | *History.*—Sixth day lochia slightly offensive; temperature 104·6° F.; exploration of uterus, intra-uterine douches and antistreptococcic serum. |
| 20 | Full term, first pregnancy. | — | Streptococcus (pure culture). | Streptococcus and staphylococcus pyogenes albus. | Fifth day. | Fever commenced on fourth day. | Recovery on twenty-fourth day. | *History.*—Forceps case; fifth day lochia normal; temperature 105° F.; exploration of uterus and intra-uterine douches. |
| 21 | Full term, first pregnancy. | — | Streptococcus (pure culture.) | Not examined. | Eighth week. | Fever commenced during first week. | Recovery in fourteenth week. | *History.*—Eighth week purulent discharge from uterus; temperature 104° F.; an anti-streptococcic serum had been used; abdominal section; chronic pelvic cellulitis. |
| 22 | Full term, first pregnancy. | — | Streptococcus (pure culture.) | Not examined. | Tenth day. | Fever commenced on third day. | Recovery in fifth week. | *History.*—Tenth day lochia normal; temperature 105° F.; profuse sudaminal rash; no special treatment. |
| 23 | Full term, fourth pregnancy. | — | Streptococcus and bacillus coli communis. | Streptococcus and bacillus coli communis. | Seventh day. | Fever commenced on fifth day. | Recovery on twenty-first day. | *History.*—Forceps case; seventh day lochia offensive; temperature 104° F.; exploration of uterus, removal of placental fragments, intra-uterine douches, and antistreptococcic serum. |
| 24 | Premature labour, fifth pregnancy. | — | Streptococcus, bacillus coli communis, and bacillus pyocyaneus. | Bacillus coli communis. | Twenty-first day. | Fever commenced fifth or sixth day. | Recovery on twenty-eighth day. | *History.*—Twenty-first day signs of pelvic cellulitis; lochia purulent; temperature 105° F.; intra-uterine douches. |
| 25 | Full term, sixth pregnancy. | — | Streptococcus and staphylococcus pyogenes albus. | Streptococcus, bacillus coli communis, and staphylococcus pyogenes albus | Third day. | Fever commenced on third day. | Recovery on fourth day. | *History.*—Third day lochia slightly offensive; temperature 102·5° F.; intra-uterine douches. |

TABLE I.—CASES OF FEVER AFTER MISCARRIAGE OR LABOUR AT FULL TERM—(*Continued*).

*A*—CASES TERMINATING IN DEATH. *B*—CASES OF SEVERE FEVER WITH RECOVERY. *C*—CASES OF SLIGHT FEVER WITH RECOVERY.

*B—Cases of Severe Fever with Recovery—(Continued).*

| No. | Labour at full term or miscarriage. | Age. | Bacteriological examination of uterus. | Bacteriological examination of vaginal discharge. | Date after confinement on which bacteriological examination was made. | Onset of symptoms after confinement. | Result. | — |
|---|---|---|---|---|---|---|---|---|
| 26 | Full term, first pregnancy. | — | Streptococcus and staphylococcus pyogenes albus. | Streptococcus, staphylococcus pyogenes albus, and bacillus coli communis. | Sixth day. | Fever commenced on third day. | Recovery on twenty-fourth day. | *History.*—Forceps case; sixth day lochia normal; temperature 106° F.; exploration of uterus, repeated intra-uterine douches, and antistreptococcic serum. |
| 27 | Premature labour, second pregnancy. | — | Streptococcus and staphylococcus pyogenes albus. | Streptococcus and staphylococcus pyogenes albus. | Fourth day. | Fever commenced on third day. | Recovery. | *History.*—Fourth day lochia normal; temperature 102·5° F.; no special treatment. |
| 28 | Full term, sixth pregnancy. | — | Streptococcus and staphylococcus pyogenes albus. | Not examined. | Fifth day. | Fever commenced on fourth day. | Recovery. | *History.*—Fifth day lochia normal; temperature 103·5° F.; no special treatment. |
| 29 | Full term, fourth pregnancy. | 29 | Streptococcus, staphylococcus pyogenes albus, and a bacillus (? species). | Not examined. | Forty-fourth day. | Fever commenced fourth day; apparent recovery; rise of temperature again on eighteenth day. | Recovery in seventh week. | *History.*—Temperature rose to 102·4° F. on the fourth day; intra-uterine douches and apparent recovery; on the eighteenth day the left leg began to swell and the temperature rose again; on the twenty-first day the right leg began to swell; on the thirty-third day she was admitted into hospital with double phlegmasia alba, with a temperature of 102° F.; ten days later she became unconscious and passed urine and fæces involuntarily; temperature 102° F.; pulse uncountable; special puerperal anti-streptococcic serum was given, the temperature fell, and speedy recovery followed. |
| 30 | Full term, first pregnancy. | — | Staphylococcus pyogenes aureus and bacillus coli communis. | Staphylococcus pyogenes aureus and bacillus coli communis. | Fourth day. | Fever commenced on third day. | Recovery on sixth day. | *History.*—Fourth day lochia slightly offensive; temperature 103° F.; exploration of uterus and intra-uterine douches. |
| 31 | Full term, first pregnancy. | — | Micrococcus pneumoniæ and bacillus coli communis. | Micrococcus pneumoniæ and bacillus coli communis. | Fourth day. | Fever commenced on fourth day. | Recovery on seventh day. | *History.*—Fourth day exploration of uterus; retained portions of membranes removed; intra-uterine douches; abrupt fall of temperature on seventh day. |
| 32 | Miscarriage at third month, third pregnancy. | — | Micrococcus pneumoniæ (pure culture). | No examination. | Third day. | Fever commenced on second day. | Recovery on sixth day. | *History.*—Second day the temperature was 102·5° F.; on the fourth day the lochia were very offensive; exploration of the uterus and removal of offensive placental fragments. |
| 33 | Full term, fourth pregnancy. | — | Diplococcus (? micrococcus pneumoniæ) and bacillus coli communis. | Diplococcus (? micrococcus pneumoniæ) and bacillus coli communis. | Tenth day. | Fever commenced on third day. | Recovery on fifteenth day. | *History.*—Tenth day lochia offensive; temperature 104° F. |
| 34 | Full term, second pregnancy. | — | Diphtheroid bacillus (pure culture). | Diphtheroid bacillus, staphylococcus pyogenes albus, and a bacillus (+ Gram) (? species). | Fifth day. | Fever commenced on fourth day. | Recovery on seventh day. | *History.*—Fifth day lochia offensive; temperature 103·5° F.; intra-uterine douches. (See "A 'Diphtheroid' Bacillus isolated from the Uterus in Two Cases of Puerperal Fever," Foulerton and Bonney, Transactions of the Pathological Society of London, 1903.) |
| 35 | Miscarriage at second month. | — | Diphtheroid bacillus, and (?) another bacillus (species not identified). | Not examined. | Fourteenth day. | Fever commenced on third day. | Recovery. | *History.*—Fourteenth day lochia normal; temperature 104° F.; exploration of uterus and intra-uterine douches. |
| 36 | Full term, first pregnancy. | — | Sterile. | Streptococcus and staphylococcus pyogenes albus. | Ninth day. | Fever commenced on second day. | Recovery by fourteenth day. | *History.*—Prolonged labour; ninth day lochia normal; temperature 103° F. |
| 37 | Full term, first pregnancy. | — | Sterile. | Streptococcus, bacillus coli communis, and bacillus pyocyaneus. | Fifth day. | Fever commenced on third day. | Recovery on sixth day. | *History.*—Fifth day lochia normal; temperature 105° F.; no special treatment. |
| 38 | Full term, first pregnancy. | — | Sterile. | Bacillus coli communis and another bacillus (species not identified). | Fifth day. | Fever commenced on fourth day. | Recovery on sixth day. | *History.*—Fifth day lochia offensive; temperature 105° F.; exploration of uterus and intra-uterine douches. |
| a | b | c | d | e | | g | h | i |

| a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|
| 39 | Full term, second pregnancy. | — | Sterile. | Bacillus pyocyaneus and bacillus coli communis. | Eighteenth day. | Fever commenced on fifth day. | Recovery on twenty-eighth day. | *History.*—Eighteenth day lochia greenish and purulent; temperature 104° F.; rigors and delirium; exploration of uterus and intra-uterine douches. |
| 40 | Full term, sixth pregnancy. | — | Sterile. | Sterile. | Fifth day. | Fever commenced on second day. | Recovery about twenty-first day. | *History.*—Fifth day lochia purulent and not offensive; temperature 104° F.; intra-uterine douches. |

*C—Cases of Slight Fever with Recovery.*

| a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|
| 41 | Full term, fourth pregnancy. | — | Staphylococcus pyogenes albus and bacillus coli communis. | Staphylococcus pyogenes albus and bacillus coli communis. | Fifth day. | Fever commenced on third day. | Recovery on sixth day. | *History.*—Fifth day lochia offensive; temperature 102° F. |
| 42 | Full term, first pregnancy. | — | Staphylococcus pyogenes albus and bacillus coli communis. | Staphylococcus pyogenes albus, bacillus coli communis, and another bacillus (species not identified). | Sixth day. | Fever commenced on third day. | Recovery during second week. | *History.*—Sixth day temperature 100° F. |
| 43 | Full term, first pregnancy. | — | Staphylococcus pyogenes albus (pure culture). | Staphylococcus pyogenes albus (pure culture). | Seventh day. | Fever commenced on fifth day. | Convalescent on ninth day. | *History.*—Seventh day lochia rather offensive; temperature 100° F. |
| 44 | Full term, first pregnancy. | — | Diplococcus (large size, – Gram), species not identified. | Not examined. | Third day. | Fever commenced on third day. | Recovery on sixth day. | *History.*—Retained placenta; third day lochia normal, temperature 101° F.; intra-uterine douches. |
| 45 | Full term, second pregnancy. | — | Sterile. | Staphylococcus pyogenes albus and bacillus coli communis. | Eighth day. | Fever commenced on second day. | Recovery on tenth day. | *History.*—Eighth day lochia offensive; temperature 101° F. |
| 46 | Full term, first pregnancy. | — | Sterile. | Staphylococcus pyogenes albus and bacillus coli communis. | Seventh day. | Fever commenced on fourth day. | Recovery on tenth day. | *History.*—Seventh day lochia normal; temperature 100° F. |
| 47 | Full term, first pregnancy. | — | Sterile. | Staphylococcus pyogenes albus and bacillus coli communis. | Fourteenth day. | Fever commenced on seventh day. | Recovery on eighteenth day. | *History.*—Forceps case; fourteenth day suppurating laceration of perineum, lochia offensive; temperature 102° F. |
| 48 | Full term, first pregnancy. | — | Sterile. | Staphylococcus pyogenes albus and bacillus coli communis (also a bacillus, + Gram, not isolated). | Third day. | Fever commenced on third day. | Recovery on seventh day. | *History.*—Third day lochia offensive; temperature 101° F.; intra-uterine douches. |
| 49 | Full term, first pregnancy. | — | Sterile. | Staphylococcus pyogenes albus. | Tenth day. | Fever commenced on sixth day. | Recovery on twelfth day. | *History.*—Tenth day lochia normal; temperature 100° F.; no special treatment. |
| 50 | Full term, eighth pregnancy | — | Sterile. | Bacillus coli communis. | Fourth day. | Fever commenced on third day. | Recovery on eighth day. | *History.*—Post-partum hæmorrhage; fourth day lochia offensive; temperature 102° F. |
| 51 | Full term, first pregnancy. | — | Sterile. | Bacillus coli communis. | Sixth day. | Fever commenced on fifth day. | Recovery during second week. | *History.*—Sixth day lochia normal; temperature 100° F. |
| 52 | Full term, first pregnancy. | — | Sterile. | Bacillus coli communis. | Seventh day and eighth day. | Fever commenced on second day. | Recovery on eighth day. | *History.*—Seventh day lochia offensive; temperature 102° F.; uterus explored and fragments of retained placenta removed. (Contents of uterus examined on two days.) |
| 53 | Full term, ninth pregnancy. | — | Sterile. | Bacillus coli communis and a diplococcus (of large size—Gram). | Fourth day. | Fever commenced on fourth day. | Recovery on sixth day. | *History.*—Forceps case; fourth day lochia offensive; temperature 100° F.; no special treatment. |
| 54 | Full term, first pregnancy. | — | Sterile. | Sterile. | Eighth day. | Fever commenced during first week. | Recovery at end of second week. | *History.*—Chorea came on after delivery; eighth day lochia normal; temperature 99·5° F. |

arthritic fluid it is necessary to use some culture medium to which fresh human blood serum has been added; but in the special circumstances of the present investigation such media were not usually necessary, as in most cases the uterine discharge itself consisted mainly of blood. In certain cases the discharge from the uterus was purulent and without any obvious trace of blood and in these cases micrococcus gonorrhœæ, if present, would not have been obtained in culture. In some of our cases, then, there has been this possible source of fallacy to which we will refer again when dealing with certain cases in which the contents of the uterus appeared to be sterile of bacteria; we need only add now that in none of the 54 cases of puerperal fever did the microscopic examination of freshly prepared smears made from the discharge show intracellular cocci such as might on further examination have proved to be micrococcus gonorrhœæ.

*Examination of cervical secretion in non-pregnant women.*—The cervical secretion in non-pregnant women was obtained in the majority of cases without the use of a speculum; the woman was placed in the semi-prone position and the vagina being rendered patent the secretion was taken by means of a "swab" of sterilised cotton-wool mounted on a long wire. In the case of some of the nulliparous women, however, a Sims's speculum had to be used in order to obtain free access to the os. In this series of cases, in addition to the set of culture tubes used for the uterine discharge in the previous cases, smears of fresh human blood on sloped agar were used in order to insure a suitable medium for the growth of micrococcus gonorrhœæ.

*Results of the examination of the contents of the uterus in normal puerperia.*—We commenced our investigation with the examination of the contents of the uterus in a short series of 12 cases in which the puerperium had up to the time of our examination been normal. In no case had the temperature up to the time of our examination risen above 99·6° F., and in none of the cases did any rise of temperature above that point occur subsequently. The result of our examination of these cases was that in every case the contents of the uterus proved sterile of bacteria. In all of the cases sufficient blood was smeared out over the surface of the media inoculated to insure the growth of micrococcus gonorrhœæ had that organism been present. The bacteriological examination of the uterus was carried out at periods varying from three to ten days after confinement and the patients included both primiparæ and multiparæ.

In seven out of the 12 cases a bacteriological examination of the lochia, as found in the vagina, was also made. In three out of these cases no growth of bacteria occurred; in one case we obtained a pure growth of bacillus coli communis; in one case a pure culture of staphylococcus pyogenes albus; in one case we found both these bacteria; and in the remaining case we obtained a pure culture of a diplococcus which did not stain by Gram's method, which grew freely on ordinary nutrient gelatin at a temperature of 20° C. without liquefying the medium, and which we subsequently found in the contents of the uterus in two cases of puerperal fever and once in the cervical secretion of a non-pregnant woman. Our results in this small series of 12 cases are therefore in accordance with the conclusions of those who believe that the uterine cavity in the normal puerperium is sterile of bacteria. And, incidentally, our results were useful as a test of the efficiency of our method for obtaining a sample of the contents of the uterus free from any contamination by the lochial discharge in the vagina—a question of some importance when the results of our examination of the contents of the uterus in puerperal fever come under consideration.

We do not propose to attempt to weigh the relative value of work which has shown the sterility of the uterine contents in normal puerperia as against that which has given opposite result. We would only point out that practically every likely source of fallacy in this investigation works in one direction; faulty clinical methods in collecting the contents of the uterus and errors due to imperfect bacteriological technique tend alike to the production of bacterial growth on the culture media when the uterus itself is sterile. And, in short, in a matter of this kind, negative evidence must carry rather more weight than positive evidence, which is founded on the appearance of growth on the media inoculated. Amongst those who have obtained growth from the contents of the uterus in normal puerperia are Döderlein and Winternitz who examined the uterus in 250 "afebrile" cases and found bacteria present in 43.

| — | Day of puerperium on which the examination was made. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st and 2nd. | 3rd, 4th, and 5th. | 6th. | 7th. | 8th. | 9th. | 10th. | 11th. | 12th. | 14th. | 15th. | Total. |
| Uterus sterile ... | 2 | 3 | 27 | 10 | 30 | 52 | 39 | 34 | 8 | 1 | 1 | 207 |
| Bacteria present | 0 | 2 | 2 | 5 | 6 | 9 | 12 | 6 | 1 | 0 | 0 | 43 |

Vogel attempts to reconcile the contradictory results of different workers by the statement that the presence or absence of bacteria in the uterus has some relation to the stage of the puerperium at which the examination is made. He believes that in "afebrile" cases the uterine lochia are sterile during the earlier days but that in the later days bacteria will be found not infrequently. Vogel examined the contents of the uterus in two series of 15 cases each. In the first series of cases cultures from the contents of the uterus were attempted on the fourth day after labour, in the other series on the eighth or ninth day. The results were as follows.

| — | Cases examined. | Sterile. | Streptococci found in— | Other bacteria found in— |
|---|---|---|---|---|
| Examined on fourth day ... ... ... ... ... | 15 | 12 | 1 | 2 |
| Examined on eighth or ninth day ... ... ... | 15 | 5 | 2 | 8 |

The results obtained by Krönig must also be referred to. Krönig examined the uterine lochia of 63 "afebrile" puerperal women and found bacteria present in 13, streptococci in three, staphylococcus pyogenes aureus in one, micrococcus gonorrhœæ in four, bacillus coli communis in one, and anaerobic bacteria in six.

*The contents of the uterus in cases of puerperal fever.*—We may next proceed to consider the results of our examination of the contents of the uterus in cases of puerperal fever, together with some cases in which fever followed miscarriage. We have examined in all 54 such cases, as set forth in Table I., in which the cases are arranged in three series in accordance with their clinical severity. Series A includes two cases of miscarriage and 12 cases of labour at full term, all terminating in death. Series B includes four cases of miscarriage and 22 cases of labour at full term, in all of which the symptoms would be described clinically as "severe" and in which recovery followed. In every case the temperature rose to 102° F. or higher. Series C includes 14 cases of what would generally be termed "slight" fever after labour at full term. In none of the cases did the temperature exceed 102° F. and in all the rise of temperature, such as it was, constituted the main symptom of disease. In order to prevent any misapprehension we may explain how we arrived at this classification in series. After we had investigated our first 50 cases we arranged them in the three series under their respective numbers and, having regard only to the clinical symptoms recorded, our classification thus far was made absolutely without reference to the bacteriological findings; and it was only after we had thus grouped our cases into three series that we arranged individual cases in each series in accordance with the respective bacteriological findings. After our 50 cases had been thus classified and arranged we examined four additional cases, two of which terminated fatally and two of which recovered after symptoms of extreme severity.

Before proceeding to the detailed consideration of the bacteriological findings in these 54 cases we may mention that a few of our cases came from the wards of a lying-in hospital (all these cases are included amongst Series C). Some of the cases were attended in the obstetric out-patient department of a general hospital, amongst patients of the poorest class, and frequently living under the most insanitary conditions; others of the cases occurred in the private practice of various medical practitioners who were so kind

as to allow us to make the necessary examination. Taken on the whole, then, our cases may be said to be fairly representative of general obstetric practice, but including, perhaps, an unusually high proportion of cases of severe illness.

The general results of the bacteriological examination in the 54 cases may be tabulated as follows:—

| — | Sterile. | Bacteria found in— | Total. |
|---|---|---|---|
| *Series A*—Miscarriage ... ... ... ... | — | 2 | — |
| Labour at full term ... ... | — | 12 | 14 |
| *Series B*—Miscarriage... ... ... ... ... | — | 4 | — |
| Labour at full term ... ... | 5 | 17 | 26 |
| *Series C*—Labour at full term ... ... ... | 10 | 4 | 14 |
| — | 15 | 39 | 54 |

From Table I. it will be seen that out of 48 cases of fever after labour at full term 12 terminated fatally, giving a total case mortality of 25 per cent. Of 34 cases (Series A and B) in which after labour at full term the temperature rose to above 102° F. 12 died, giving a case mortality for this group of 35·3 per cent. In 48 cases of fever after labour at full term the contents of the uterus were sterile in 15 and contained bacteria in 33; the case mortality when bacteria were present in the uterus was 36·3 per cent.; in the other group of cases no deaths occurred. Of the 48 cases of fever after labour at full term the patient was a primipara in 21, a multipara in 23, and in four cases no information as to former pregnancies was obtained. The distribution of primiparæ and multiparæ in the three series of cases, excluding cases of miscarriage, was:—

| — | Primiparæ. | Multiparæ. | Not known. | Total. |
|---|---|---|---|---|
| *Series A*—Severe cases, death ... ... | 2 | 8 | 2 | 12 |
| *Series B*—Severe cases, recovery ... | 9 | 11 | 2 | 22 |
| *Series C*—Slight cases, recovery ... | 10 | 4 | — | 14 |
| — | 21 | 23 | 4 | 48 |

From this it will be seen that the relatively undue preponderance of primiparæ in our cases is mainly due to the relatively considerable proportion of them in Series C, a fact which probably is caused in part by the inclusion of a few cases from the wards of a lying-in hospital in which a large majority of the patients are primiparæ; and all of the cases quoted from this institution come under the description of "slight" cases. It will also be noticed that out of 44 cases in which the "parity" was known the primiparæ account for only two deaths as compared with the eight deaths amongst multiparæ.

*(To be continued.)*

## A CASE OF MULTIPLE NEURO-FIBROMATOSIS.

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CASES of generalised neuro-fibromatosis are sufficiently rare to be worth recording and the following case presents several features of interest.

The patient, a man, aged 47 years, was admitted to the Leeds General Infirmary for "multiple swellings of the body and limbs," pain in the left arm and leg, and great weakness. The history he gave was as follows. He had been a perfectly healthy man until he was 30 years of age when the first lump appeared in the right lumbar region. It had never been painful but had gradually increased in size until it was about as large as a duck's egg, when it was removed at another hospital some two months prior to admission. A similar but larger tumour was removed from the front of the right chest at the same time. He did not know what the nature of these tumours was made out to be. A number of other tumours had made their appearance in various parts of the trunk and limbs during the last 15 years; the only symptoms they had caused were some pains and slight dysæsthesia in the affected limbs; the pains in the arm and the leg complained of on admission were of this nature. About 11 months previously he had noticed a swelling in the hypogastric region which had increased in size up to the time of his present admission. He could give no definite idea of the size of it when first noticed. The only symptom which he had attributed to its presence was that he had had to get up rather more frequently at night to pass urine, but there had been no increased frequency in the day-time. He had lost two stones in weight during the last two months. He said that his father had had lumps similar to those which he himself had, one on the inner side and one on the back of his left arm. They caused a good deal of neuralgic pain but were not removed, death resulting from other causes at the age of 79 years.

The patient looked as if he had lost flesh recently but was not strikingly emaciated or cachectic. In addition to the abdominal tumour there were found a number of smaller tumours scattered over the trunk and limbs. These varied in size from one-half of an inch to three or four inches in their long axis; they were fusiform or oval in shape; moveable to a varying extent; some were superficial and occurred along the course of the nerve trunks, others were deeper in the substance of the muscles and other tissues. They were firm, elastic, and painless to the touch. The skin was in no case adherent over them. A complete list of the situations in which they were discovered is given in the description of the post-mortem appearances.

The appearance of the abdomen was striking. There was a tumour in the situation and of about the size and shape of a pregnant uterus at the sixth month. On palpation it was smooth, firm, painless, and of uniform consistence throughout, so far as could be made out. It appeared to be fixed somewhere in the pelvis but permitted some amount of lateral movement.

As there were increased frequency of micturition and much constipation, which were thought to be due to the tumour filling up the pelvis, it was decided to attempt its removal and laparotomy was accordingly performed. It was then found to be adherent to the concavity of the sacrum by a short pedicle; there were also adhesions to the sigmoid flexure. It shelled out fairly easily but there was a good deal of hæmorrhage. The patient died about four hours after the operation from shock.

At the necropsy, 17 hours post mortem, the following conditions were found. There was a fair amount of blood extravasated into the peritoneal cavity. There was some erosion of bone about the middle of the concavity of the sacrum where the tumour had been adherent. It had also pressed on the left ureter, causing hydronephrosis with extreme secondary atrophy of the kidney. Tumours were also found in the following situations amongst others: (*a*) one of about the size of a hen's egg attached by strong adhesions to the lowest part of the right side of the sacrum; (*b*) one opposite the front of the eleventh left rib in connexion with a branch of the intercostal nerve; (*c*) in the substance of the left pectoral muscle; (*d*) on the left side of the lowest part of the rectum; (*e*) a small fusiform swelling in the course of the right median nerve; (*f*) opposite the left rhomboid muscle in connexion with a small branch of a posterior cutaneous nerve; (*g*) one of the size of a hen's egg in the substance of the left soleus; (*h*) a large tumour of about the size of a fist projected from below the edge of the left gluteal muscles (this proved to be part of a large multiple tumour-mass in connexion with the great sciatic nerve and extended up into the pelvis); (*j*) two small fusiform tumours in the course of the left pneumogastric in the neck; (*k*) a large one, three inches long, in the corresponding situation on the right side; (*l*) one of equal size and probably in connexion with the sympathetic, in the angle between the innominate and carotid arteries; (*m*) in connexion with the plexus gulæ, just at the passage of the œsophagus through the

diaphragm (this was of about the size of a hazel-nut and was in direct continuity with a number of smaller tumours in this plexus, the solar plexus, and along the splenic artery); (n) a small one in the fissure beneath the liver; (o) in the spinal canal, in the cauda equina, and within the dura mater, one as large as a hazel-nut and two smaller ones (the nerves here presented the appearance of fusiform thickening in several places); and (p) one as large as a pea on the posterior root of one of the lowest dorsal nerves.

The large tumour had a very definite capsule and was of a uniformiy oval shape with a slightly nodular surface. It measured approximately 20 by 15 centimetres in its diameters. On section it presented a loculated appearance in many parts, the loculi being due to areas of jelly-like degeneration which were either semi-opaque or translucent and of a bluish or greenish colour. There were many hæmorrhages into these jelly-like cysts, some of considerable size, and there were numerous small hæmorrhagic foci throughout the tumour. Most of the tumours presented an appearance identical with this one; generally the larger the tumour the larger the size of, and the more numerous were, the areas of degeneration. Only the smallest ones showed no degeneration. The brain was normal. Both lateral lobes of the prostate were enlarged and there were a few small gall-stones. There were no other abnormalities.

*Histology.*—The tumours received for examination were three in number. One was the large sacral tumour which had been removed by operation and which had been placed *en masse* in Kaiserling's solution (formalin, 400 cubic centimetres; potassii nitras, 15 grammes; potassii acetas, 30 grammes; and water, 2000 cubic centimetres) and transferred later to spirit. The second was a smaller tumour, about 3 by 1·5 centimetres, somewhat degenerated. The third was a small tumour, two by one centimetres, not yet degenerated, and with it was a considerable length of its nerve. The two latter were in the above-mentioned formalin solution when received, and were transferred to Müller's fluid in which they were kept some months. Pieces of all three were imbedded in paraffin by M. Heidenhain's (carbon bisulphide) method.

Pieces were cut from the large sacral tumour to include the growth, the hæmorrhage, and the jelly-like material. Externally, there was a thick connective-tissue capsule with many blood-vessels. No definite evidence of nerves could be seen in it. The tumour itself was a sarcoma, the growth consisting of elongated cells, some with several nuclei; the cells, as a rule, had several processes. Parts of the tumour, however, were more like a soft fibroma in structure, with small cells and an open network of fibres. A large part of the mass consisted of hæmorrhages and degenerate material of a homogeneous consistence. In some parts around these there was an open mesh-work in the tumour, infiltrated with plasma cells and red blood cells, and containing occasional mast cells. Masses of brown, highly refractile pigment were to be met with, particularly near the hæmorrhages. The tumour was fairly well supplied with blood capillaries, and round some of them, in sections stained with polychrom-methylene blue, there was a red colouration, probably metachromatic staining of mucin with the methylene-azur of the staining solution. The employment of Weigert's fuchsin-resorcin stain showed no elastic tissue in the tumour except round the vessels. The second tumour was uniformly sarcomatous, like the sarcomatous part of the large one, in the parts where it was not degenerated. There were no hæmorrhages in it but the degeneration exactly resembled that described above and around it were similar masses of pigment which appeared to be in some cases intracellular. The third tumour was uniformly sarcomatous, the growth exactly resembling the others. In two places, however, within this tumour strands of medullated nerve fibres were seen in sections stained by the Stroebe and Kultschitzky-Weigert-Pal methods. These nerve fibres appeared to be continuous with the tumour tissue, not demarcated from it by anything in the nature of a connective tissue sheath.

*Relation of tumours to nerves.*—All the tumours were definitely sheathed by a connective-tissue capsule. In the case of the smallest examined there were well-defined medullated nerve fibres stretched over the capsule. In the second tumour there were a few remains of nerve fibres in the same situation. Sections of the largest tumour were not stained to show this point as the material had been in spirit before it had been received for histological examination and thus was considered not suited for the necessary mordanting with chromium salts. But judging from the condition met with round the second tumour it is extremely improbable that any remains of nerve fibres could have been found. In sections stained by the Kultschitzky-Weigert-Pal method the myelin sheath was seen to be segmented, swollen, and varicose in some places and narrowed to fine fibrillæ in others. Staining by Stroebe's method showed variations in thickness, varicosities, and uneven staining of the axis cylinders. Sometimes one was to be seen ending abruptly in a corkscrew spiral as if it had been broken and retracted. In several places, principally near the tumours but also a few centimetres away from the third tumour, the connective tissue between the bundles of nerve fibres was infiltrated with polymorphonuclear leucocytes. Pieces of material from the third tumour, and the nerve a little distance away from it, showed no reaction of degeneration by Marchi's method. This means that either the myelin sheath had not undergone fatty change or that, if fatty change had taken place, it had occurred over seven weeks before death.[1]

This case is a good example of one variety of that group of cases to which the term "general neuro-fibromatosis" has been given. The several affections included in this group are as follows[2]: (1) multiple neuro-fibromata—generalised neuro-fibromatosis; (2) plexiform neuro-fibroma—plexiform neuro-fibromatosis; (3) molluscum fibrosum—cutaneous neuro-fibromatosis; (4) elephantiasis neurbmatosa; (5) pigmentations of the skin associated with neuro-fibromatosis; and (6) "secondary malignant neuroma," being the sarcomatous transformation of one or other forms of neuro-fibromatosis. The best known variety of this group—multiple neuro-fibromatosis—can no longer be regarded, as formerly, as being due to the occurrence of multiple independent nerve tumours, in the strict sense of the word, but rather as local exaggerations of a diffuse or generalised overgrowth of the connective-tissue sheaths of the nerves. Each variety of the affection may occur independently and typically, but many cases occur which are intermediate, with every possible combination of lesions. The whole group is probably best known under the name of von Recklinghausen's disease, that observer having given in 1882 the first clear description of it, recognising the close relation of its various types. It is also known by the name, suggested by Bruns, "elephantiasis nervorum." The present case is an example of the last term of the series—secondary malignant neuroma.

As to the origin of the tumours the findings in this case harmonise completely with the generally accepted view that they arise from the endoneurium. The third tumour gives strong evidence on this point, which is strengthened by the description of a case by Sorgo.[3] Here some of the tumours were extremely small and in these he describes and figures multiple origins of the tumour concentrically round individual nerve fibres. Sorgo, however, goes on to say that the tumour originates from the neurilemma, a mode of origin *a priori* unexpected, and not, in our opinion, proved by his figure. Unfortunately, we did not see this paper until all the nerve-containing part of the third tumour had been cut up longitudinally, so we cannot compare transverse sections with his figure.

As to the effects of the neuro-fibromatosis on the nerve fibres we may further quote Alexis Thomson[4]: "The behaviour of the nerve fibres is one of the most disputed points in the morbid anatomy of neuro-fibromatosis and although the subject has received great attention, and although the most modern methods of staining the nerve fibres have been employed for its elucidation, it still remains undecided whether the nerve fibres participate in the morbid process or whether they remain passive and unaffected by the changes surrounding them. That the nerve fibres are lengthened as they pass over the tumour-like enlargements of the nerves or where they are dissociated from one another by the formation of new connective tissue between them, so that they pursue a wavy or spiral course, has been already referred to. Several observers have maintained that new nerve fibres are formed. ..... Although it is difficult to prove the negative, the new formation of nerve fibres may be regarded as unlikely in the absence of nerve cells. There is great difficulty in deciding the question as to the

[1] Mott and Halliburton: Philosophical Transactions of the Royal Society of London, 194, 437 (1902). Quoted by Mann: Physiological Histology, p. 252. Oxford, 1902.
[2] H. Alexis Thomson: On Neuroma and Neuro-fibromatosis.
[3] Virchow's Archiv, vol. clxx. (1902), p. 399.
[4] On Neuroma and Neuro-fibromatosis.

occurrence of degeneration in the already existing nerve fibres." And later: "It is very different in the case of sarcomatous transformation of the overgrown endoneurium, this being followed by the most extensive degeneration and destruction of the nerve fibres similar to that ..... occurring in the primary sarcoma of nerves."

The findings in this case point to definite degeneration of nerve but whether this degeneration is due to the sarcomatous nature of the tumours or to their mere mechanical effects must remain to some extent uncertain. We hold the latter view, for, although the tumours were histologically sarcoma, they were still definitely encapsulated and capable of being shelled out. And there were no evidences of increasing disturbance of nerve function, such as is the rule in those cases in which sarcomatosis has supervened. The presence of leucocytic aggregations in the nerve is in harmony with degeneration in them and may be secondary thereto, as found by Ballance and Purves Stewart[1] in their work on nerve degeneration. So far as we know these leucocytic aggregations have not been described previously in this condition.

The distribution of the tumours in this case is, on the whole, typical. The involvement of one of the great plexuses (the lumbar), the occurrence of intramuscular tumours, and an extensive involvement of the sympathetic system are all common happenings. The vagus is far more frequently affected than any other cranial nerve. Implication of the nerves within the spinal canal occurs in about a quarter of all the cases and the nerves of the cauda equina are more usually involved. But the change is oftenest outside the dura mater rather than within.

With regard to the malignant transformation which occurs in many of these cases Garré, who first gave them the name of "secondary malignant neuroma," has pointed out that the sarcomatous growth differs in several important particulars from primary sarcoma developing on previously normal nerves. About 17 per cent. of recorded cases of simple neuro-fibromatosis have developed sarcoma, and the sarcoma which occurs, while of the same structure as that which occurs in other situations, has the following peculiarities. Its onset, often in tumours that have existed for many years, is frequently determined by the removal of one of the tumours or other form of trauma, and while possessing a tendency to recur locally does not, with the rarest exceptions, give rise to metastasis but, on the other hand, is followed by a generalised sarcomatosis in the remaining tumours, and though the malignancy of these tumours is less than that of primary nerve sarcoma the cases invariably end fatally. For even if an early and successful removal of a tumour which has developed malignant features be carried out the patient is practically certain to sustain a fresh outbreak of sarcoma in other parts of his diseased nervous system. Our case illustrates some of the above points. One of the tumours (that which was removed) had taken on recent growth at a rapid rate and there existed throughout the other tumours a sarcomatous transformation, though not so extreme in degree.

Clinically, the development of malignancy is indicated by increase in size in the tumours, fixation to skin and surrounding structures, increase of pain and loss of function of affected nerves, together with the usual accompaniments of wasting and cachexia. This case is probably in the stage of early and partial malignancy in the tumour removed (and but for which removal the patient might have lived some time longer), with early generalised malignancy in most, if not all, of the other tumours, which had not apparently given the usual clinical indications of such change. In this connexion the evidence of nerve degeneration described above is of special interest and importance, for the sarcomatosis of the tumours is so early that, in our opinion, they may be safely regarded as behaving in this respect like the simple tumours. The undoubted occurrence of such degeneration in simple neuro-fibromatosis has been noted in but a few cases, although of common occurrence where the tumour presents clinically the features of malignancy.

Two tumours had been removed two months prior to admission to the Leeds Infirmary and it is a matter for regret that the scars were not examined histologically. It is doubtful if this were the determining cause of the sarcomatosis which may have anteceded that event, although it may possibly have accelerated the progress of the disease.

The etiology of the affection is obscure. The only point of importance worth noting in this case is the influence of heredity, which has an especial bearing on the pathology. There have been only some 13 previously recorded cases in which heredity, or occurrence in families, has been evidenced and the particular variety of the affection was not always the same in the same family and the evidence occasionally not as convincing as in this case. Still, the proportion of cases in which such a factor has been traced, together with their frequent association with other developmental errors and their occurrence at birth or in early life, is such as to render very probable the view that it is a disease of the nervous system dating from intra-uterine life.

The clinical symptoms resulting from the presence of these tumours is, on the whole, remarkably slight, as is illustrated by our case, except in those which have undergone marked sarcomatous transformation, when they are the rule. But, as we have seen, the sarcomatous change in the present case, though generalised, was not sufficiently advanced to cause them. The absence of symptoms is often such that patients do not notice the presence of the tumours or cannot remember the date of their origin. An exception occurs, of course, where the tumours press upon the spinal cord or nerve roots or where there are effects from pressure on other viscera. (The ureter and kidney were involved in this case but it is not certain that any symptoms were referable to this.) This raises the interesting question as to how much pressure is necessary to cause nerve degeneration, in view of the rarity with which such degeneration has been found in these cases, and also how much degeneration is compatible with intact function, for here there were definite degeneration and very little evidence of disturbed function. Again, both vagi were freely involved, as is frequent, yet no symptoms referable to this fact seem to have occurred and this has been the rule in similar cases. The size of the abdominal tumour in this case is exceptional, though R. W. Smith, in his important memoir, records a still larger one.

We do not give a bibliography of the subject, for Alexis Thomson in his monograph, which we have freely utilised, has given an extensive one up to 1900 and we have noted no case of importance since that date.

[1] The Healing of Nerves, Macmillan, 1901, p. 94.

## THE TREATMENT OF TUBERCULOSIS OF THE LUNGS BY MEANS OF TUBERCULIN AND OTHER BACTERIAL DERIVATIVES.[1]

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AT a time when the costly methods of sanatorium treatment are being so closely considered it is not at all out of place to view the other more directly combative measures which from time to time have emanated from the laboratories with the object of ascertaining whether they hold out any hope of a more economic means of dealing with so widespread a disease as tuberculosis or whether by their employment it may not be possible to supplement the results of sanatorium treatment and so increase the number of cases of cure and improvement. That there is room for improvement is shown by the figures quoted by Jessen.[2] Engelmann found that the German sanatoriums produced a leaving cure of 74·4 per cent.; after four years 79·9 per cent. of these patients were dead or unable to work. Even after four years only 44 per cent. of the cases in stage I. were able to work. In Turban's cases after one to seven years 30·4 per cent. of the first stage cases were able to work. In the Basler sanatorium at Davos after four years from leaving, counting all cases, 64·3 per cent. were capable of full work. Meissen[3] gives a report of what are described as the best results of an average stay of five months in the Hohenhonnef sanatorium—248 in number. From three to 11 years later 84 per cent. were sound and able to work, 16

[1] A paper read before the University College Medical Society on Jan. 18th, 1905.

[2] Centralblatt für Innere Medicin, 1902, No. 23, S. 587.

[3] Zeitschrift für Tuberkulose und Heilstättenwesen, 1903, Band iv., Heft 2, S. 115.

per cent. had relapsed, and some of these, about 3·6 per cent. of the total, had died.

It is now some 14 years since Koch introduced what is known as the "old" tuberculin for the treatment of pulmonary tuberculosis. For many reasons the method fell into disrepute but now, probably because observers have learnt to be more patient and have carried out the treatment with less haste and more judgment and knowledge, there appears to be a tendency once more to consider the more direct attack of tuberculous disease by bacterial products combined with what is more usually understood as sanatorium treatment. Before proceeding to an account of these more direct methods it is necessary to call attention to several points. It will probably be not far wrong to say that in a general hospital cases of tuberculosis of the lungs are interesting from the single point of view of diagnosis and that when it has been decided that the disease is present the little that remains to be done in the case of the poor who frequent the hospital is to treat them symptomatically and to do all that is possible to prevent them from infecting those around them because in the large majority of cases the disease is too far advanced to allow of successful treatment by special methods. One of the first things to be discovered in a close study of tuberculosis of the lungs is that many phthisical patients live for years. Families may be decimated by tuberculosis, the source of infection being one of the parents who for years has been the subject of the disease but beyond having occasional attacks of bronchitis and "asthma" or winter coughs has had no symptoms calling for careful examination and treatment. The following is an account of such a family. The parents, both apparently well, have had 13 children. The first four and the seventh died at ages varying from a few weeks to four and nine months; it is impossible to say whether any of these were tuberculous. The fifth child died aged ten years from tuberculosis of the lungs; the sixth child, at six years, from tuberculosis meningitis; the eighth, ninth, and tenth children died at 15, 21, and 19 years respectively, all from tuberculosis of the lungs; there are three children living, one a girl, aged 28 years, quite well; another aged 18 years, who is well now but formerly was an out-patient at Brompton; and a boy, aged six years, who was brought to me and was found to be tuberculous. Both parents allowed themselves to be examined and the husband was found to be tuberculous. Such a history will serve to show how insidious a disease tuberculosis of the lungs is and as quite possibly the father had infected his children one after the other it will also show how necessary it is when once a case of tuberculosis of the lungs comes under observation to search for evidence of similar disease in all those with whom the patient has been in contact.

Another point that requires consideration is the meaning of the term "cure." Loss of tissue cannot be made good but it is quite certain that many people who have formerly had the tubercle bacilli in their sputum are free from symptoms of lung disease, have no tubercle bacilli in their sputum, and are able to pursue their avocations in life with considerable success. Such a condition may be reasonably called a cure, but by this we do not mean a cure in an absolute sense, such as we do of an attack of diphtheria. Tuberculosis of the lungs often is so slowly progressive that it does not fall to the lot of many physicians to be able to say they have watched such cases to the end and found that the patient has died at a good age from some other malady, the tuberculous diseases having entirely involuted. It is hardly necessary to recall the fact that the tubercle bacillus has only been certainly recognisable since 1882–84, when Koch discovered the organism and a certain method of recognising it. Advanced case of tuberculosis of the lungs where from three to five lobes are involved cannot be cured, though the disease may in favourable cases be arrested for a time. The problem, however, is very different when the question is raised whether a case with one lobe only involved, or a moderate amount of two lobes, can be cured. The answer is that such a case may be curable, but even in these cases it is not justifiable to say that a cure is certain, though it would be quite right to urge that such a case should be given every chance of sanatorium and other treatment.

Another point which should be carefully remembered is this, that it is not now considered so essential to spend time simply in investigating the degree of disease at any one part of the lung area, i.e., from what may be called a pathological point of view; to diagnose that the lung is in one or other of the three conditions of invasion, consolidation, or excavation is well enough in a post-mortem description, but from a practical point of view this method must be supplemented and what may be styled the "sanatorium" attitude must be adopted as well, and an endeavour must be made to discover rather how many lobes and what extent of each is involved at all. Turban[4] speaks of three stages: stage I., if only one lobe is the seat of moderate disease or if parts of two lobes are moderately involved; stage II., in which two whole lobes are moderately involved or one severely; and stage III., when the disease is more extensive than stage II. The adoption of this classification will save many rather unnecessary conflicts as to whether a cavity is or is not present and judging from the universal acceptation of Turban's grouping will serve to show how very necessary it is to know what are the superficial anatomical lines of separation of the various lobes and over what extent dulness to percussion, altered breath and voice sounds, and adventitious sound are present.

Lastly, it is necessary to remember the importance of detecting tubercle bacilli in the sputum, for cases of acute and chronic apical disease occur presenting even in the latter case the signs of cavities which are not due to tuberculous disease; unfortunately, tuberculous disease may be present without revealing any signs and the patient may not have any expectoration. If suspicious of tuberculous disease, judging from such ominous signs as wasting, night sweats, and hæmoptysis, it may be necessary to resort to the tuberculin test, though this requires the greatest care in application.

It must be very distressing for the public to hear that an observer whose experience is a very large one has recently been obliged to admit that the proportion of absolute cures of pulmonary tuberculosis, even when all methods are available, is not very large, if by absolute cure is meant the disappearance of symptoms and of abnormal physical signs, together with the loss of bacilli from the sputum. It would be most satisfactory if records of absolute cures were published in detail with special reference to the duration of the cure. Some observers even doubt that there is such a thing as an absolute cure of pulmonary tuberculosis when once the process has produced physical signs. This, however, is taking too sombre a view, for there are cases known to physicians of large experience in whom there has been an absolute cure such as has already been defined. Even if cases are not curable in an absolute sense patients may be told that so much can be done by open air and other treatment that life is greatly lengthened and you as medical men must be prepared with the knowledge of what cases are suitable for special treatment, for it is cruelty to send a hopeless case away from friends and home and it is a serious fault on the part of the medical man unnecessarily to put the friends to the cost of such special treatment. Naturally the authorities at sanatoriums aim at securing early cases for treatment, for such cases alone are capable of being cured, although not certainly.

1. *The tuberculins.*—The name "tuberculin" has been given to several potent agents which are prepared from the secretions of the tubercle bacilli or from the bodies of the bacilli. Robert Koch elaborated his first tuberculin in 1890–91 and this agent is sometimes spoken of as the "old" or original tuberculin (T). Designed at first as a remedial agent it has now become a most valuable diagnostic aid, but it is incorrect to say that it not used for remedial purposes because recently there have been published reports of its use, alone or combined with the newer forms of tuberculin, as an agent capable of materially improving the percentage cures of pulmonary tuberculosis. It is as well at this stage to remember that in this country the scepticism which followed on the failure of Koch's earlier attempts to cure cases of tuberculosis by means of tuberculin prevents not only the use of the old tuberculin for therapeutic purposes but even for diagnostic ones. In certain well-known continental sanatoriums the use of tuberculin in treatment is a common practice. Extended observations which have been carried out for many years with most rigid care and attention to detail on the value of the tuberculins are now being published and judging from the evidence which is brought forward it is impossible to avoid the view that tuberculins as a specific means of treatment have a real value.

The original or "old" tuberculin is practically a glycerine extract of tubercle bacilli; it also contains some of the

[4] Ueber beginnende Lungentuberkulose, Wiesbaden, 1899, S. 31.

ingredients of the medium in which the bacilli are grown and some of the products of their own activity. The bacilli, which are not necessarily virulent, are grown in large shallow flasks containing slightly alkaline veal broth, glycerine, and peptone; free access is given to oxygen. After from six weeks to three months the bacilli will have imparted to the medium a certain amount of toxic material. The whole is now boiled or sterilised in an autoclave at 110° C. The fluid is then concentrated to half its bulk in a water bath and passed through a Chamberland filter, the filtrate is again evaporated till it has reached one-tenth of its original bulk and is once more passed through a Chamberland filter. The resulting liquid is known as Koch's "original tuberculin"; it is brownish red in colour and the glycerine present renders it viscid. The old tuberculin has a specific gravity of 1179 [5] and by means of this figure it is possible to convert the dosage from cubic centimetres to grammes. It is very common, however, to use measurement by centimetres when speaking of the old tuberculin. Unfortunately there is no exact standardisation of the old tuberculin; a rough one is that a full-grown guinea-pig should be able to tolerate 1 cubic centimetre and that a similar animal inoculated with tubercle bacilli should be killed by a dose of 0·1 cubic centimetre.

The toxins present have been investigated by Hunter, Kühne, and others. Several alkaloids are present, possibly responsible for the febrile reaction following injection. In addition there are present three or four albumoses, one of which was formerly considered to be remedial and another responsible for the inflammatory reaction provoked around the foci of tuberculosis. Peptone has also been detected in the old tuberculin. Considerable doubt exists as to whether albumoses are the real toxic agents responsible for the changes following injection. It is more and more suspected that they act merely as carriers of the real active ferments which so far have not been isolated. The important point to remember is that old tuberculin is not only filtered but it is sterilised; risk of inoculation with this fluid is, therefore, practically impossible. The large proportion of glycerine present renders it possible to preserve the old tuberculin indefinitely so long as it is kept in a cool place. In 1897 Koch produced a series of tuberculins—Tuberculin Oberer, known as Tuberculin O, Tuberculin "rest" or Tuberculin R, and Tuberculin alkalinum or Tuberculin A. The reason for the introduction of these agents was that it was felt that the original tuberculin contained but little of the toxic substances capable of provoking in the human body anything approaching to immunity. A young growth of highly virulent tubercle bacilli is procured from glycerine serum; the growth is then dried in vacuo and thoroughly pulverised in a steel mortar containing non-glazed porcelain balls; this is preferably carried out by machinery and should last five or six days. The powder is then mixed with sterile distilled water and thoroughly centrifugalised for three quarters of an hour. The supernatant liquid is then removed and constitutes what is known as Tuberculin O. The residuum is again dried, further triturated, and emulsified with another supply of sterile distilled water and centrifugalised once more; the upper portion is pipetted off. The residuum left is treated by a repetition of the above processes until at last no residuum is left. All the fluids pipetted off at each stage, except the first, are combined and are known as Tuberculin R. To preserve the fluid a certain quantity of glycerine is eventually added but before this is done the tuberculins are passed through a Chamberland filter; unlike the old tuberculin they are not sterilised by heat. It will be seen then that there is more risk in the use of these newer tuberculins, first, because they are obtained from highly virulent cultures, and, secondly, because they are not sterilised. Tuberculin alkalinum—i.e., Tuberculin A—is obtained by extracting dried tubercle bacilli with decinormal soda solution and then filtering. It is no longer used as it invariably produces abscess formation at the seat of injection. Tuberculin O and Tuberculin A produce effects which are closely allied to those produced by the old tuberculin—i.e., they intensify the necrotic processes taking place in the neighbourhood of tuberculous foci. Of these three new tuberculins Tuberculin R is the agent which is mostly used; Tuberculin R produces no local reaction at the seat of lesion or injection; it appears to produce immunity. Old tuberculin causes local reaction and necrosis around the lesion and apparently also possesses the power to some extent of producing immunity. The necrosis is probably due to the interaction of two agents—one present in the old tuberculin and the other in the infected individual.[6] Wright [7] includes old tuberculin and Tuberculin R in his classification of tubercle vaccines—i.e., those derivatives of the protoplasm of the tubercle bacillus which, on introduction into the body, are capable of producing substances which enter into chemical combination with the tubercle bacillus—the so-called "tuberculo-tropic" substances of Ehrlich. It must be noted that this use of the term vaccine is somewhat at variance with the more classical use of the term. The term vaccine is closely associated with the name of Jenner and his method of treatment consisted in introducing an attenuated but not necessarily sterile vaccine into the body to protect against small-pox.

The strength of Tuberculin R is such that one cubic centimetre contains 10 milligrammes of solid matter. The doses, however, are not expressed in cubic measure but by weight, not, it must be remembered, of the liquid but of the dried substance contained within it. This is an important matter, for unless accuracy is observed in dosage such potent agents as the tuberculins are capable of producing serious results, as was probably the case in one of three fatal cases occurring after the use of tuberculin.[8] This was due to a confusion of the dosage of Tuberculin R with the dosage of Koch's "new tuberculin," known now as the "emulsion of tubercle bacilli" or "bacillary emulsion."[9] This tuberculin is simply an emulsion of the powdered bodies of tubercle bacilli in a 50 per cent. solution of glycerine; the mixture is allowed to stand till all appreciable particles have sunk and the supernatant liquid is drawn off and is ready for use. There is no sterilisation and there is no filtration. Thellung [10] discovered a sample of bacillary emulsion which produced fatal results on injection into animals. The emulsion is interesting because, like Tuberculin R, it has a marked power of raising the agglutinating properties of the serum of the animal into which it is injected, by which is meant that the serum readily causes the clumping of tubercle bacilli. One cubic centimetre of the fluid contains five milligrammes of powdered bacilli.

Besides the above three groups of preparations derived from the tubercle bacillus by Koch, other agents derived in a somewhat similar way have been prepared by other workers. Some have been almost discarded and others are so new that little information at present can be obtained as to their value. One of these more recent tuberculins is know as Béraneck's. Its mode of preparation is briefly the following.[11] Tubercle bacilli are grown in a mixture of broth and solution of lime. This is then filtered and the filtrate which is evaporated to a syrupy consistence is claimed by Béraneck to contain a group of bodies which he calls basitoxins. The remnants of the tubercle bacilli which have not passed into the filtrate are then digested with a 1 per cent. solution of orthophosphoric acid and filtered. The filtrate contains a group of bodies described by Béraneck as acidotoxins. Experimentally, Béraneck finds that guinea-pigs are enabled by the injection of a mixture containing equal parts of the basi- and acido-toxins to survive inoculations with tubercle bacilli. Denys [12] has also prepared a tuberculin by growing tubercle bacilli in glycerine broth, then filtering and using the filtrate; no heat is applied. It will be thus seen that this preparation, though possibly containing materials that are destroyed by sterilisation (carried out by Koch in the preparation of old "tuberculin"), is more dangerous by reason of the absence of sterilisation. Hirschfelder,[13] believing that toxins become antitoxins by a process of oxidation by the tissues, prepared tuberculin from a virulent strain of tubercle bacilli and then oxidised it *in vitro* by means of hydrogen peroxide; after sterilisation this preparation was injected for remedial purposes. Hunter [14] and Hahn endeavoured to separate the remedial albumoses from old tuberculin but, as has already been mentioned, there is

[5] Waldheim: Die Serum-, Bakterientoxin- und Organ-Präparate, 1901, S. 186.

[6] Rosanquet: Serums, Vaccines, and Toxins, London, 1904, p. 241.

[7] Proceedings of the Royal Society, 1904, vol lxxiv., No. 499, p. 171.

[8] See an examination of these cases by Adler, Präger Medicinische Wochenschrift, 1904, No. 30, S. 389.

[9] Koch: Deutsche Medicinische Wochenschrift, 1901, Nov. 28th, S. 829.

[10] Centralblatt für Bakteriologie, 1902, Abtheilung I. No. 1, S. 28.

[11] Béraneck: La Semaine Médicale, 1903, No. 48, p. 393.

[12] Bulletin de l'Académie Royale de Médecine de Belgique, 1902, tome xvi., No. 3, pp. 153 and 499.

[13] Deutsche Medicinische Wochenschrift, 1897, Therapeutische Beiträge, No. 4, S. 25.

[14] Brit. Med. Jour., 1891, vol. ii., p. 169.

reason to believe that albumoses are rather the carriers of toxins than the actual toxic agents. Ruppel[16] has separated from tuberculin what has been called tuberculinic acid, which, however, according to Behring and Kitashima[18] is closely allied to nucleinic acid.

Two other forms of tuberculin, or rather modifications, are known as Klebs's tuberculocidin and antiphthisin.[17] Klebs, also believing that the process of sterilisation adopted by Koch in the preparation of old tuberculin drove off certain important volatile constituents, dispensed with the use of heat and separated by special processes tuberculocidin and antiphthisin which are of the nature of albumoses but present enzyme action. Klebs was able to show that tuberculocidin was capable, after injection into an infected animal, of producing marked morphological changes in the tubercle bacilli. Finally, Hahn, following Buchner's methods, obtained by the hydraulic pressure of masses of tubercle bacilli a solution which he called tuberculo-plasmin. Von Ruck[18] has also prepared for use an aqueous extract of Koch's tuberculin, the attempt being made, as was Hunter's, to obtain an agent which produced no harmful symptoms.

2. Before dealing with the statistical part of the subject it will be well to turn to the other efforts that have been made directly to combat tuberculosis. Various workers have endeavoured to produce what are known as *antituberculous sera*. The principle of preparation is considerably different from that underlying the production of tuberculin, though the end in view may be of the same order—viz., to secure the neutralisation of toxins produced by the tubercle bacilli in infected individuals by the development of anti-bodies, to secure the production of bacteriolysins for the purposes of solution of the bacteria or to increase the function recently described by Wright (*vide supra*) as an opsonic pressure or power present in the serum, by which power the bacilli succumb the more readily to the digestive action exerted by the phagocytes of the blood.

Antituberculous sera are produced in the same way as antidiphtheritic serum. The first attempts in the direction of the use of antituberculous sera were made by Richet and Héricourt[19] who sought to render rabbits immune to experimental inoculation by the use of the serum of dogs—animals which are naturally immune to tuberculosis. Behring, Nissen, and other workers have shown that this method is useless. The next step was to inoculate animals with tubercle bacilli and Richet and Héricourt introduced virulent human tubercle bacilli into dogs; after six days the dog serum was obtained and introduced into the tuberculous patient and apparently with some good results. A further attempt was made by Behring and others to produce an antituberculous serum in animals by the injection of tuberculin. Babes and Proca attempted to check avian tuberculosis by the injection of dead or attenuated human bacilli. At this stage Maragliano developed his method, basing it on the idea that neither the old tuberculin nor Tuberculin R really contained all the toxins of tubercle bacilli. His tuberculin was really a mixture of two tuberculins to all intents and purposes like old tuberculin and Tuberculin R with the exception that for the preparation of the former virulent strains of tubercle bacilli were used; the one prepared by sterilisation contained, as old tuberculin does, a substance which causes a rise of temperature, and the other, like Tuberculin R, contained a substance which causes a fall of temperature. In 1899 Maragliano[20] described a variation of his earlier mode of preparation, using heat to 90°–95° C. instead of 100° C. To obtain an antituberculous serum he injected this toxic material into dogs, asses, and horses in increasing doses for several months and three to four weeks after reaching a maximal dose the animal was bled and the serum obtained. This serum is said to be both bacteriolytic and antitoxic.

Nicholls[21] has prepared a serum from goats by means of injections of Koch's Tuberculin R. The last of these antituberculous sera to attract attention is one introduced by Marmorek.[22] After discussing the effects of tuberculin Marmorek expresses the opinion that tuberculin introduced into tuberculous subjects stimulates the tubercle bacilli to produce a toxin which is capable of causing a reaction—rise of temperature, &c.—and he finds that this reaction is especially marked in cases of early infection. He has devised a special method by means of which he asserts that he is able to obtain this special substance. He uses a young culture of tubercle bacilli and cultivates in a special medium consisting of a mixture of glycerine broth and of a leucotoxic serum obtained from a calf which has been previously treated for a long time with injections of leucocytes obtained from guinea-pigs. In this medium the special toxic agent differing from tuberculin is produced; by means of the filtrate obtained from this medium Marmorek asserts that rabbits can be rendered immune against tubercle bacilli. In order to produce serum for curative purposes horses are injected with the filtrate during a period of eight months. The serum obtained from horses treated in this way renders rabbits immune against the tubercle bacilli, though at the time of writing Marmorek had not succeeded in making guinea-pigs immune against tubercle bacilli. The immunised rabbits on being killed were found to be free from tuberculous lesions, though control animals had succumbed to tuberculous infection following inoculation with tubercle bacilli.

3. *Vaccination against tuberculosis.*—The use of vaccines in tuberculous cases has already been referred to. It is, of course, quite clear that it is not meant that vaccination against tuberculosis is possible by means of the vaccine used against small-pox. It is in many ways unfortunate that the term should be used in any sense other than the original Jennerian one, because in the case of small-pox the actual ferment, organised or unorganised, has not yet been discovered, whereas in tuberculosis this difficulty has been surmounted. However, the term is in use and it is necessary to know what is meant by it. The idea is that tubercle bacilli may be so attenuated by various means that inoculation with them does not produce any tuberculous disease but is capable of producing anti-bodies. Such attenuated organisms have been introduced into lower animals or lower animals have been inoculated with avian or bovine tubercle bacilli. The serum of these inoculated animals has been used but then such treatment would, strictly speaking, be a serum treatment to which reference has already been made. No one so far has dared for prophylactic, diagnostic, or remedial purposes to inoculate a human being with a culture of tubercle bacilli however attenuated, and Maragliano's so-called vaccine described by him at the International Congress of Medicine at Madrid in 1903[23] is non-living so that it cannot be other than some form of tuberculin or serum. At this stage the question may be raised whether it is not a useless task to endeavour to produce immunity to this organism when almost all clinical experience and much experimental work tend to show that immunity against the tubercle bacillus is impossible of production. This objection no longer holds, since Wright[24] has not only demonstrated the possibility of increasing the defensive properties of the serum against this particular organism but has reduced the problem to positive mathematical proof.

*Antistreptococcic sera.*—The last method requiring attention is one which aims at overcoming the secondary infections which prove so serious when once tubercle bacilli gain access to the lungs. Some maintain that these other infections precede the tuberculous one. Before any of the above special methods of treatment are instituted it is necessary to reduce the fever by all the general methods, such as rest in bed, fresh air, &c. It is not possible in all cases to bring the temperature to the normal limit, for a pure tuberculous infection is capable of maintaining an elevation of a degree or so. Unfortunately general methods only too frequently fail to reduce the temperature to such moderate limits as 99° or 100°. To obviate this difficulty much attention has of late been given to the use of antisera calculated to overcome the other organism or organisms present in cases of mixed infection of the lungs, more especially the streptococcus. The difficulty in finding an antistreptococcic serum which will, in a remedial sense, fit the particular streptococcus causing different forms of streptococcic septicæmias is a very great one, so that it would be naturally expected that this method would be likely to meet with many failures. An effort has, however,

[16] Hoppe-Seyler's Zeitschrift für Physiologische Chemie, Band xxvi., Hefte 3 and 4, S. 218.
[17] Berliner Klinische Wochenschrift, 1899, No. 25, S. 537.
[18] Die causale Behandlung der Tuberculose, 1894, S. 487.
[19] Therapeutical Gazette, 1896, p. 308.
[20] Comptes Rendus et Mémoires de la Société de Biologie, 1899, March 2nd, p. 157.
[21] Berliner Klinische Wochenschrift, No. 49, S. 385.
[22] Montreal Medical Journal, 1903, vol. xxxii., p. 475.
[23] Archives Générales de Médecine de Paris, Nov. 24th, 1903, p. 2945; THE LANCET, Nov. 21st, 1903, p. 1470, and March 26th, 1904, p. 854; and Berliner Klinische Wochenschrift, 1903, No. 48, S. 1108.
[24] Medical News, July 4th, 1903, p. 1.
[25] Loc. cit.

been made to overcome this difficulty by the introduction of what is known as polyvalent antistreptococcic serum.

*The application of tuberculin in treatment.*—If the more special treatment with tuberculin is to be tried then certain rules advocated by Goetsch[25] and others should be followed. The patient should be free from fever or the febrile reaction should be very slight; the amount of tuberculin injected must not be increased unless the last dose has been tolerated without any reaction; the patient must be kept in bed on the day of injection as well as on the following day; if reaction takes place then the next dose should be of the same size as the one which preceded it; if a very marked reaction takes place then the dose is repeated at a longer interval, say, from four to eight days, and is reduced in amount; supposing no reaction occurs after each increasing dose then the intervals of injection should be two free days; these rules apply to the use of old tuberculin and bacillary emulsion. Petruschky[26] gives the following table of the doses of old tuberculin and bacillary emulsion to be administered at intervals as above directed and it will be noticed that both forms of tuberculin are measured by weight. As a vehicle Petruschky recommends a solution of pure carbolic acid one part, sodium chloride 1·5 parts, and distilled sterilised water 200 parts. The syringe kept specially for the purpose should be sterilised and the seat of injection should be cleansed with spirit and ether.

DOSES FOR ADULTS.

*Old tuberculin* (in milligrammes).—0·1 milligramme—0·25—0·5—1·0—2·0—3·0—4·0—6·0—8·0—10·0—15·0—25·0—35·0—45·0—60·0—80·0—100·0.

Bacillary emulsion containing five milligrammes of solid substance in one cubic centimetre (in thousandths of a milligramme).—0·1 thousandths of a milligramme—0·3—1·0—2·0—3·5—5·0—7·0—10·0—15·0—25·0—35·0—45·0—60·0—80·0—100·0.

Should the treatment with old tuberculin be badly tolerated it has been found beneficial to institute a course of bacillary emulsion as above indicated, continuing with it till a dose of 0·1 milligramme is reached, when treatment with old tuberculin in the doses above mentioned is recommenced. It is also found advisable to repeat the courses of injection during many months and even for several years (Petruschky) in the so-called treatment by "intervals." Petruschky gives the indications of favourable and unfavourable signs during the treatment with tuberculin and in the near future it is probable that Wright's methods of estimating the opsonic power of the blood rather than methods for testing the agglutinative power will be used to supplement and possibly to replace the ordinary clinical estimates of the patient's improvement or the reverse and with an accuracy which is mathematical. The same means of estimating the changes in the opsonic power of the serum of a patient under treatment with tuberculin injections are also available for determining the time at which it is most favourable to carry out subsequent injections; an injection given during the negative phase of the phagocytic reaction as estimated according to the method of Major W. B. Leishman, R.A.M.C., may cause a greater depression of phagocytic power which, as Wright has shown, is due to a greater fall of opsonic power in the serum of the patient's blood.[27]

*Results of tuberculin injection as shown by statistical records.*—From a collection of 656 reported cases largely drawn from publications of Pottenger, *vide infra*, in which the tuberculins were used in the earliest stage of pulmonary tuberculosis, the percentage of cures in the sense already defined and in some cases observed for six years, in others for several months, averaged 91. In a series of 611 cases in a similar condition treated without tuberculins the average percentage of cases was 62—a difference of 29 per cent. In this last connexion, to show what a vast difference there is between the results obtained at sanatoriums where the circumstances of the patient are so much more favourable and the surroundings more conducive to improvement these figures may be compared with those of the Brompton Hospital. In 1902, 296 ordinary cases of tuberculosis of the lungs with one or two lobes affected were admitted; of these 22 per cent. only are reported much improved. In 1903, of 180 similar cases admitted 42 per cent. are reported as much improved. Trudeau has also given the results of two sets of cases of similar degree of lung affection; 46 cases treated with tuberculin gave a cure of a little over 80 per cent.; of 47 cases not treated with tuberculin 72 per cent. were cured in the same sense as the others. Turban[28] has given details of two sets of cases with tubercle bacilli in the sputum; of 86 cases treated with tuberculin 52·6 per cent. showed permanent good results and 47·7 per cent. were freed from tubercle bacilli in the sputum; of 241 cases not treated with tuberculin but with an equal degree of involvement of the lung and with tubercle bacilli in the sputum, 39·4 per cent. only showed permanent good results and only 27·4 per cent. were freed from the tubercle bacilli in the sputum. Turban[29] has also given the results of treatment in cases in which the disease had reached what he calls the third stage; 21 were treated with tuberculin and 75 per cent. were alive at the end of two years; of 84 similar cases not treated with tuberculin 50 per cent. only were alive at the end of two years. Lawrason Brown, reporting results obtained at the Adirondack Sanatorium,[30] found that in 325 early cases the percentage of cure of the total number was 63 per cent., as against 72 per cent. when tuberculin was used. This would indicate that tuberculin produced but very little improvement, and criticising the figures given by Brown it would really appear that 204 out of 282 cases were apparently cured without tuberculin, which is 72·3 per cent.—*greater* than the results with tuberculin. Pottenger,[31] collecting records of a large number of cases of tuberculosis of the lungs, irrespective of stage of severity, finds that 44·9 per cent. are apparently cured when culture products are used and only 13 per cent. when this method is not adopted. Moeller and Kayserling[32] speak most favourably of

*Table showing the Results of Treatment of Early Cases of Pulmonary Tuberculosis.*

*With Tuberculin.*

| Observer. | Publication. | Total treated. | Stage. | Percentage cured. |
|---|---|---|---|---|
| Turban. | Weicker's Beiträge zur Frage der Volksheilstätten, p. 22. | 20 | I. | 100 |
| Trudeau. | Transactions of the Association of American Physicians, 1900, p. 36. | 24 | ,, | 83 |
| V. Ruck. | Clinical Reports, Winyah Sanatorium, 1899. | 105 | ,, | 93 |
| Jessen. | Centralblatt für Innere Medicin, 1902, No. 23, p. 585. | 14 | ,, | 100 |
| Wilkinson. | Brit. Med. Jour., 1902, vol. i., p. 1389. | 12 | ,, | 100 |
| Klebs. | Quoted by Pottenger. | 14 | ,, | 100 |
| Rembold.* | Quoted by Wilkinson. | 16 | ,, | 75 |
| Goetsch. | Quoted by Pottenger. | 356 | ,, | 78 |
| Pottenger.† | Therapeutic Gazette, 1902 (p. 13) and 1903 (p. 163). | 10 | ,, | 100 |
| Lawrason Brown.‡ | Zeitschrift für Tuberkulose und Heilstättenwesen, 1904, Band iv., Heft 3 und 4. | 31 | ,, (probably) | 72 |
| Petruschky.§ | Berliner Klinik, 1904, Heft 188. | 54 | I., II. | 100 |
| | | 656 | — | 91 |

*Without Tuberculin.*

| | | | | |
|---|---|---|---|---|
| Bowditch. | Report of Massachusetts State Sanatorium at Rutland. | 66 | I. | 59 |
| Clapp. | Report of Massachusetts State Sanatorium at Rutland. | 82 | ,, | 64 |
| Trudeau. | Report of Adirondack Cottage Sanatorium. | 300 | ,, | 68 |
| Stubbert. | Report of Liberty's Sanatorium. | 163 | ,, | 58 |
| | | 611 | — | 62 |

* Observations six years after.

† Loss of appreciable symptoms one year after treatment.

‡ Apparent cure; abnormal physical signs absent or if present indicative of healing; non-febrile; absence for some months of sputum or if present no tubercle bacilli.

§ Patients were strong, chronic, non-febrile cases.

[25] Deutsche Medicinische Wochenschrift, 1901, No. 25, S. 405.
[26] Berliner Klinik, 1904, Heft 188.
[27] Wright: Brit. Med. Jour., 1904, vol. ii., p. 583.
[28] Loc. cit., S. 153.
[29] Ibid.
[30] Loc. cit.
[31] Therapeutic Gazette, 1902, p. 13.
[32] Zeitschrift für Tuberkulose und Heilstättenwesen 1902, Band iii., Heft 4, S. 279.

the use of old tuberculin in 18 cases and also of the bacillary emulsion of Koch in seven cases. Klebs[33] gives as a result of treatment by tuberculocidin: Stage I., 16 cases, 16 healed; stage II., 22 cases, none dead, none unimproved; and stage III., 68 cases, 41 essentially improved. Jessen's results are as follows: Stage I., 14 cases, in all a great improvement; stage II., 11 cases, 55·4 per cent. decidedly better; and stage III., 11 cases, 36·0 per cent. improved; this is usual in this stage. Von Ruck,[34] using tuberculocidin and antiphthisin, finds an apparent recovery in 81 per cent. of cases in stage I., 35·1 per cent. of cases in stage II., and 9 per cent. of cases in stage III.

*Use of Marmorek's antituberculous serum.*—This serum is given either in two doses daily of two and a half cubic centimetres each or in one five cubic centimetres for four days followed by a week's rest. The administration for four days followed by a week's rest is repeated three times. An interval of 14 days elapses and then the above course is repeated. If the temperature of the patient rises at any time no more serum is injected for a week. Marmorek[35] finds no results in advanced cases of pulmonary tuberculosis or in cases of tuberculous meningitis but there is improvement in less advanced cases of disease of the lung; rapid absorption of fluid was found in two cases of pleural effusion. No untoward local or general reactions occur. Dieulafoy[36] reports the results of the use of Marmorek's serum on four cases of pulmonary tuberculosis, two with pulmonary and laryngeal tuberculosis and one with effusion. The serum did not appear to have a favourable effect on the fever, the sputum, or the general nutrition. The observations were carried out in September and October, 1902. Guinea-pigs inoculated with tuberculous sputum and treated with the serum died sooner than control animals simply inoculated with tuberculous sputum. Klein and Jacobson[37] collected 31 reports on the use of this serum as published by Rothschild-Brunier,[38] Montalti,[39] Jaquerod,[40] Latham,[41] and La Néele and de Cornières,[42] and contributed cases of their own. Their opinion is favourable to the use of the serum. Montalti reports on six cases: the least advanced were practically cured and four others were distinctly benefited. Jacquerod thinks the results quite justify a continuance of the method. Rothschild-Brunier made observations on one case the subject of tuberculous lung disease and on several others which were being treated for fistula and bone and joint disease. Latham's results of the use of the serum in pulmonary tuberculosis point to a definite specific action on the part of the serum but for remedial purposes he recommended that the serum should be applied in cases less severe than the ones in which he tried the method. Lucas-Championnière[43] was unable to observe any favourable results in a case of Pott's disease, in tuberculous abscess of the hip, tuberculosis of the lungs and testicle, and two other cases of local tuberculous disease. Béraneck[44] reports that his tuberculin has been tried in 90 cases, with and without fever, and thinks that he has seen improvement in 60 per cent. Paris[45] gives full details of the mode of administration and dosage of Béraneck's serum. After the injection a general rise of temperature may take place with malaise, headache, rigors, and profuse sweats. Paris has used it in 65 cases, 14 of which were in the first stage of pulmonary tuberculosis, 19 in the second, and 32 in the third. As a result of the treatment, all the first group were cured, seven of the second, and none of the third. Other than the effects mentioned above Paris found the tuberculin quite harmless and in some 5000 injections had no case of abscess formation. Maragliano's serum appears to be disappointing, but Mircoli[46] gives details of the results in 2899 cases with cure in circumscribed febrile and non-febrile cases amounting to about 22 per cent.

Finally, there remains to be considered the antistreptococcic treatment of pulmonary tuberculosis. Menzer[47] gives the results of 22 cases. 11 of these cases were the subjects of pulmonary tuberculosis in the first stage; eight were cured (disappearance of catarrhal signs and an average gain in weight of 12 pounds in three and a fifth months), and three, still under treatment, gained five pounds in a little over a month. Three other cases in the second stage showed improvement with a gain of weight. Five cases in the third stage also improved, gaining weight, and three others were unimproved. Bonney[48] reports his results in the treatment of mixed infection in pulmonary tuberculosis. Of his 26 cases, three were quite cured; distinct improvement was found in 17 cases, though in eight of these symptoms alone were relieved, the ordinary course of the disease remaining unchecked; in the remaining six cases no results were obtained. Ostrovsky[49] describes how Menzer's serum is obtained from horses which have been rendered immune against streptococci obtained directly from man. Ostrovsky reports the results of treatment of 24 cases, possibly including Menzer's cases. 12 cases were cured, ten were definitely improved, and two were relatively improved. The methods adopted to estimate improvement in these cases is unsatisfactory, so that cure has a very doubtful meaning.

I have thus endeavoured to bring before you the various materials which may be used for the specific treatment of tuberculosis and also the results obtained. No material has, so far, been before the medical world so long as Koch's tuberculins. Judging from the evidence it would seem that the use of the tuberculins materially improves the results of treatment. It would seem therefore quite justifiable to supplement the ordinary treatment by sanatorium methods with this specific one. Tuberculin treatment is of little use alone, so that its re-introduction, though of such material value, would not reduce the cost of treatment.

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[33] Jessen: Zeitschrift für Tuberkulose und Heilstättenwesen, 1903, Band v., Heft 2, S. 151.
[34] Therapeutic Gazette, 1896, p. 308.
[35] Loc. cit.
[36] Bulletin de l'Académie de Médecine, 1903, No. 39, p. 465.
[37] Bulletin Général de Thérapeutique, vol. cxlviii., pp. 132, 171, and 210.
[38] Progrès Médical, 1904, p. 375.
[39] Ibid., 1904, p. 283.
[40] Revue de Médecine, 1904, p. 375.
[41] THE LANCET, April 9th, 1904, p. 979.
[42] Bulletin de la Société de Thérapeutique, Feb. 10th, 1904.
[43] La Semaine Médicale, 1903, No. 49, p. 402.
[44] Loc. cit.
[45] Revue Médicale de la Suisse Romande, 1904, xxiv., 10, p. 629.
[46] Gazzetta degli Ospedali, Sept. 9th, 1900, p. 1121.
[47] Münchener Medicinische Wochenschrift, 1903, S. 1877.
[48] Medical News, 1903, June 13th, p. 1108.
[49] Du Traitement de la Phtisie Pulmonaire par le Serum Antistreptococcique de Menzer, Paris, 1903.

# A CASE OF ŒSOPHAGEAL POUCH SUCCESSFULLY TREATED BY EXCISION.

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CONSULTING SURGEON, ROYAL FREE HOSPITAL; SURGEON TO KING'S COLLEGE HOSPITAL;
AND
JOSEPH CUNNING, F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE ROYAL FREE HOSPITAL.

THIS case is interesting both from the point of view of diagnosis and treatment as well as from the comparative rarity of the affection.

In February, 1904, a woman, aged 55 years, was admitted to the Royal Free Hospital with the diagnosis of epithelioma of the œsophagus. Her chief complaint was difficulty in swallowing which had been coming on for eight years. In 1897 she was treated for "bronchitis" by her medical attendant. In 1899 she attended a throat hospital and was recommended to have some carious teeth removed but no improvement followed. In 1900 she attended another hospital, again for "bronchitis," but without improvement. Her "bronchitis," she said, consisted in bringing up a large quantity of frothy sputum from the throat but she never suffered from cough. During the previous six months there was a marked increase in the difficulty of swallowing solid food. She volunteered the information that she had regurgitated, not vomited, food quite unchanged as long as three days after taking it. As instances, she gave a pickled onion and portions of rabbit. She also complained that stooping caused regurgitation and that she made a curious noise on swallowing. The patient looked so thin and half starved that several surgeons who saw her were tempted to say, "Oh! she looks as if she had malignant disease." On examination of the neck no swelling or enlargement of the glands could be detected, but on bilateral pressure over the œsophagus just below the level of the cricoid cartilage, a certain amount of gas could be squeezed up into the mouth. On swallowing two or three times gas could again be squeezed up. A medium sized bougie stopped eight inches from the teeth and could be felt to the left of the trachea. A small bougie could be passed into the stomach.

As an œsophageal pouch was now suspected from the history of regurgitation of unchanged food and from being able to squeeze up gas on pressure at the base of the neck two bougies were passed together. The first went into the pouch, the second into the stomach. The regurgitated food was examined for free hydrochloric acid but none was found. An attempt to throw some light upon the case with the Roentgen rays was unsuccessful. Metal bougies were used but seeing them at certain points in the neck was no evidence as to what prevented their onward passage. An attempt at filling the pouch with bismuth was also unsuccessful.

*Operation by* Mr. BOYCE BARROW.—A large œsophageal bougie was passed eight inches from the teeth and could be felt in the neck below, and to the left of, the cricoid. An incision was made four and a half inches long from the left sterno-clavicular articulation along the anterior border of the sterno-mastoid muscle. The sterno-mastoid was pulled outwards, the sterno-hyoid and sterno-thyroid inwards, exposing the carotid sheath. The vessels were then retracted outwards and the trachea was displayed to the inner side. The red muscular wall of the œsophagus was then seen and lying to the left of it and behind it was a white fibrous-coated pouch one and a half inches long with the bougie in it. On tracing the pouch upwards its neck was discovered to be in the lowest part of the posterior wall of the pharynx. The bougie was now removed and the fibrous coat of the neck of the pouch was divided and turned back as a cuff. The mucous membrane was then ligatured and cut through and the fibrous coat was stitched up over it. A few stitches were put in to bring the muscular coat together over the site of the neck of the pouch. A drainage-tube was placed down to the wall of the œsophagus and the rest of the wound was stitched up. The drainage-tube was removed on the third day as no saliva had come through, showing that the stitches were holding and that there was no infection from the œsophagus. The patient was fed by nutrient enemata for seven days and was then able to swallow milk. At the end of a fortnight she was discharged with the wound healed and was able to swallow any kind of food.

Two months later the patient reported that she had increased seven pounds in weight, that she had no difficulty in swallowing, that there was no regurgitation, and that she was no longer troubled with the frothy saliva which had caused her to be treated for "bronchitis." Eight months after the operation she again showed herself and was then three and a half stones heavier than at the time of the operation.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### PURPURA AS A LATE COMPLICATION IN A CASE OF SCARLET FEVER.

BY JOHN W. MILLER, M.D. VICT., M.D. LIVERP., D.P.H. CANTAB.,
ASSISTANT MEDICAL OFFICER OF HEALTH OF BLACKBURN.

THE patient in this case was a boy, aged four years, who suffered from scarlet fever and was admitted into the Blackburn Fever Hospital under the care of Dr. Alfred Greenwood on Oct. 27th, 1904. The illness commenced on Oct. 25th and the attack was of a fairly severe type, the throat symptoms being well marked. Nasal discharge was present on admission to hospital. Otorrhœa commenced in the left ear on Nov. 1st and in the right ear on the 7th and these discharges continued until the child's death. His temperature ranged from a minimum of 98° F. at 6 A.M. on Nov. 8th to a maximum of 102° at 6 P.M. on Oct. 27th. The symptoms existing at the time of admission underwent gradual improvement until on Nov. 8th it was noted that the child's general condition was good and his temperature normal. His temperature remained normal until the evening of the 11th, when it was 102°. On the 12th there were enlargement of the glands of both sides of the neck and tenderness on pressure. The neck was more swollen on the 13th and 14th, which swelling diminished until the 17th, it then being slight and remaining so until death supervened. On the 19th at 10 A.M. hæmorrhage was first noticed in the tissues around the left eye, causing discolouration of the skin and swelling of the underlying tissues. There was also bleeding from both nostrils. On this day the temperature at 6 A.M. was 101° and at 6 P.M. it was 99·4°. On the morning of the 20th the skin around both ankles was seen to be affected by this hæmorrhagic condition over an area measuring one and a half inches by one inch. The skin was purplish-red in colour and there was some swelling of the underlying tissues. On the evening of the same day hæmorrhages, accompanied by similar discolouration of the skin, were noticed over the sacral regions (dimensions, four inches by four inches), the right hip (dimensions, one and a half inches by one inch), and both wrists (dimensions, two inches by one inch). The subcutaneous tissues over the right hip were markedly swollen and there was also swelling to a less extent over both wrists. The patient was now in a semi-comatose condition, very restless, and frequently crying out as if in pain. The respiration and pulse-rate were increased and the lips were blanched. The temperature on this date was 101° at 6 A.M. and 100·8° at 6 P.M.

On the morning of Nov. 21st it was found that the hæmorrhages had grown larger; the one in the sacral region now extended upwards towards the neck and outwards; the one over the right wrist extended upwards for about four inches and laterally across the whole breadth of the forearm; and the one over the left wrist extended laterally across the arm and upwards as far as the elbow. There was also more swelling of the underlying tissues. The condition of the patient during the day gradually became worse, the uræmia being more marked, and death took place at 6 P.M. from exhaustion. The temperature at 6 A.M. was 102·4° and at about 5.50 P.M. it was 100·6°. There were no other clinical signs beyond those mentioned. Astringent treatment internally failed to produce any beneficial effect. The urine was examined for blood and albumen on the 19th, 20th, and 21st, with negative result. There was no further bleeding from the nose after the 19th nor was there hæmorrhage from any other mucous membrane. The gums were normal. Inquiry failed to elicit any hereditary tendency to bleeding in the family. Two other brothers, who developed scarlet fever at the same time, have since recovered from the disease without any similar complication. The above-mentioned complication is exceptional, commencing during convalescence on the twenty-sixth day of the disease.

Blackburn.

### NOTES ON A CASE OF TETANUS AND ITS TREATMENT.

BY FREDERICK W. HENDERSON, L.R.C.P. & S. IREL.

WHILE cutting hay on July 10th, 1902, a man was sharpening his scythe when he slipped and fell on it, cutting the palm of his hand. The cut extended from the head of the metacarpal bone of the index finger in a circular form to the base of the metacarpal bone of the little finger, deep down to the bones. The hæmorrhage was profuse, several arteries having to be ligatured. The wound was washed out with carbolic lotion and the edges were brought together with several sutures. Healing took place quickly without much discharge and the sutures were removed in a week or ten days' time. On July 25th symptoms of lock-jaw set in which chloral and bromides controlled very well. On August 1st several spasms of the muscles prevented the patient from walking and in falling in his room he caught hold of a chair to draw himself up, in doing which the edges of a corner of the wound were partly pulled open. On the 5th tetanic convulsions set in very acutely, all the muscles of the back and the legs being violently convulsed every minute. A telegram was at once sent to Messrs. Parke, Davis, and Co. of London for antitetanic serum which was injected early that afternoon and again in four hours' time. This checked the convulsions and an injection was continued morning and evening till 15 bottles of the serum were used when the convulsions entirely disappeared. The wound was frequently washed with carbolic lotion and dressed antiseptically and was completely healed on Sept. 1st.

I think the case is worth recording as the convulsions were well established before the serum was injected and the man was working at the end of September. Messrs. Parke, Davis, and Co. are highly to be commended on their prompt despatch of the serum.

Elham, near Canterbury.

# Medical Societies.

## PATHOLOGICAL SOCIETY OF LONDON.

*Subacute Atrophy of the Liver.—Prehistoric or Predynastic Vesical Calculus.—Imperforate Ileo-cæcal Valve.—Carcinoma of Adrenal.—Osteoplastic Carcinoma in Bones.—Obliterative Arteritis in the Prime of Life.*

A MEETING of this society was held on April 4th, Mr. RICKMAN J. GODLEE, Vice-President, being in the chair.

Dr. S. G. SCOTT described a case of Subacute Atrophy of the Liver. An unmarried woman, aged 23 years, with a good previous history, had been jaundiced for eight months; there had been some vomiting and the fæces were clay-coloured. On admission to the Leeds General Infirmary nothing was made out on examination. Exploratory laparotomy shed little further light. Hæmorrhage supervened and caused death. The liver was small, soft, and wrinkled; it weighed 22 ounces (625 grammes). On section the cut surface was red with gamboge spots. These spots consisted of dead and dying liver substance. The red material was a very cellular connective tissue, in which were many glandular tubules. These tubules were arranged in rings round a central vessel. They were composed in their outer part of cells like those of the smallest bile-ducts, with which they were continuous. On the inner side towards the central vessel the cells were columnar, contained fat vacuoles, and secreted bile. Morphologically, however, they were not liver cells. Dr. Scott considered that these appearances were to be interpreted as regeneration of the liver lobule from the bile-ducts. He also suggested that there might have been recovery if hæmorrhage had not supervened but thought that coincidently with the regeneration a fibrosis would have taken place.—Dr. SCOTT, in reply to questions asked by Dr. F. J. POYNTON, Dr. F. PARKES WEBER, and Mr. GODLEE, said that the bile from the gall-bladder had been examined and was sterile and did not present any abnormality. There was no obstruction to the bile-duct though the gall-bladder was distended with bile. Doses of calcium chloride had been given to the patient before the operation but not to any large amount.

Mr. S. G. SHATTOCK exhibited a Prehistoric or Predynastic Vesical Calculus which was of much historical interest as proving the existence of urinary calculus at so remote a period. The calculus was found by Professor Elliot Smith in one of the graves of the prehistoric cemetery at El Amrah, in Upper Egypt, and was presented by him to the Museum of the Royal College of Surgeons of England. The presence of a vase of stone showed the grave to have antedated by many generations the time of Menes, the first dynastic king (B.C. 4800). The age of the calculus was thus at least 7000 years. It was found lying between the innominate bones of a boy, aged about 16 years, and it consisted of compact uric acid, which gave the usual chemical reactions, thickly encrusted with phosphates. Microscopic section of the uric acid body showed it to consist as usual of coarse pale-yellow crystals radially disposed in columns. After solution of the uric acid with caustic potash a transparent matrix was revealed as in normal circumstances. The complete absence of calcium oxalate was noteworthy. In India 70 per cent. of the urinary calculi consisted of this substance, which must be ascribed largely to the use of vegetable food-stuff. In the later dynasties the food of the ancient Egyptians was chiefly vegetable. It was interesting, therefore, to notice that the recent investigations on the prehistoric people showed that they were hunters; this appeared in the discovery of hunting lances of flint in the prehistoric graves in which clay models of kine had also been found. Immensely more interesting would the calculus have proved had it been possible to associate it with the bilharziosis commonly held to explain the great frequency of urinary calculus in modern Egypt, but this, in spite of an indefinite expenditure of time and care, the speaker had been unable to do. Had the chitinous capsules of the ova been present they would certainly have been preserved and would certainly have been discoverable. The occurrence of bilharziosis in the prehistoric age therefore was not as yet shown. Nevertheless, its possibility remained and it had occurred to him to question whether the bilharzial hæmaturia might be in some explanatory way related to the first of the Biblical Egyptian plagues, but a reference to the narrative would show the incongruities attaching to such an attempt. Mr. Shattock had had the opportunity of examining a second ancient Egyptian calculus from a tomb of the Second Dynasty; it contained no bilharzia ova though in its cortex was a cavity full of the coxidia of a mould. The coxidia looked so little changed that attempts were made to cultivate from them but no growth was raised. This calculus was found (with three others) in a grave excavated at Naga-ed-dêr by Dr. George A. Reisner on behalf of the Egyptological Expedition of the University of California, subsidised by Dr. Phoebe Hearst.—Dr. G. F. STILL referred to the passage of sand from the bowel and asked whether investigations had been carried out as to the nature of this sand. He had seen the condition occur in children who were the subjects of mucous disease.—Dr. POYNTON said that tophi when examined microscopically showed the same hyaline matrix which Mr. Shattock had described after dissolving out the uric acid crystals. The first step in the formation of tophi was the necrosis of tissue followed by a deposit of biurate of sodium in very fine crystals.—Mr. SHATTOCK said, in reply, that the intestinal sand which he had described was of vegetable origin. Dr. Garrod had described intestinal sand which was mineral in character.

Dr. J. CATTO exhibited a specimen of Congenital Occlusion of the Bowel at the Ileo-cæcal Orifice. The child was born in the practice of Mr. A. Hair and was admitted to the Great Northern Central Hospital with symptoms of complete intestinal obstruction, under the care of Mr. Peyton T. B. Beale. Despite an enterostomy the child died on the third day. At the post-mortem examination the child was found to be a well-developed male. The organs, other than the intestinal tract, were normal. The middle two-fourths of the small intestine were congested and were covered with recent fibrinous lymph, the coils adhering to each other and to the left anterior abdominal parietes. The contents for the same area were of watery consistence and of pea-soup colour, becoming greener and more inspissated as the cæcum was approached. The large intestine was of the size of a pencil and empty. It was bound to the posterior abdominal wall, having no mesentery developed. The obstruction was due to a complete septum at the ileo-cæcal orifice, probably produced early in embryonic life.—Dr. G. F. STILL asked whether the adhesions which had been described were old or recent. One of the explanations of these cases of obstruction was to attribute the condition to intra-uterine peritonitis. The obstruction was more frequently situated somewhat above the ileo-cæcal valve. He asked what the condition of the large intestine had been.—Dr. SCOTT referred to a baby with signs of intestinal obstruction who had a similar occlusion of the ileo-cæcal valve. The child died shortly after operation.—Dr. CATTO, in reply, said that the adhesions which were present in the abdomen were of quite recent origin.

Dr. W. BULLOCH read, on behalf of Dr. C. E. ADAMS, a communication on Precocious Development associated with Cancerous Tumour of the Left Adrenal Body. The case was identical in its clinical and pathological aspects with those communicated this winter to the society by Dr. Sequeira and Dr. Bulloch. The patient, a boy, was normal until the age of nine years when puberty set in which was associated with a remarkable development of hair on the face and great muscular development so that at the age of 14 years he had the appearance of a full-grown man. A large tumour in the abdomen was found to be inoperable and death ensued 17 months after the operation. The necropsy showed an immense tumour of the left adrenal body and extending into the liver which weighed 15 pounds. Microscopical examination by Dr. A. N. Ledingham showed the tumour to be a malignant hypernephroma.—Mr. GODLEE pointed out the long course which some of these cases of adrenal tumours ran.—Mr. SHATTOCK said that the external sexual characters were dependent upon something more than the presence of the testicles, for if the testes were removed from a cock it still retained its male characteristics. He suggested that the epithelium of the suprarenal glands probably had an important influence on these characteristics.

Dr. F. H. THIELE exhibited and described specimens showing Large Masses of Subperiosteal Growths around the ribs, the sternum, and the scapula following primary carcinoma of the prostate. The primary metastases occurred in the medulla of the bones and grew into the subperiosteal tissue through the foramina which exist in the bones for the passage of vessels. This had been shown by von Recklinghausen in his monograph. The specimens also showed marked osteoplastic

changes in the bones; the ribs, the sternum, &c., were almost of the density of ivory. There was, however, no bone formation in the growths outside the bones. This was also described by von Recklinghausen who saw that this bony change occurred not only as an irritative change produced by the growth on the old bone but was an integral part of the carcinoma itself. It was not a peculiarity of any form of carcinoma but was simply a local attribute due to the transplantation of the growth into a soil which gave rise to bone. Bone formation occurred not only with prostatic carcinoma but with other forms such as mammary. The more infiltrating the growth was the more likely it was to have osteoplastic changes; the more sharply defined it was the less osteoplastic changes occurred. The evidences of new bone formation were: 1. The presence of a small nodule of spongy bone in even the smallest extra-medullary growths. 2. The great sclerosis amounting almost to eburnation of some of the bones like the ribs, the sternum, and the femur. 3. The formation of bone in the subperiosteal growths. Bone metastases occurred most frequently in carcinoma primary in the thyroid, the prostate, and the breast. The thyroid and the prostatic growths were said to burst directly into the veins. The order of involvement of the bones was as follows: vertebræ, femora, pelvis, ribs, sternum, humerus, flat bones of the skull, fibula, tibia, radius, and ulna. Bone metastases might produce erosion, expansion, infiltration and osteoplastic changes, and subperiosteal tumours and osteoplastic changes. The result depended upon the infiltrating or sharply defined nature of the metastases.—Dr. W. S. LAZARUS-BARLOW said that it was the growths which were mainly cellular which were more especially associated with metastatic growth in the bone, whilst those growths which were mainly fibrous invaded other tissues.

Dr. E. MICHELS and Dr. PARKES WEBER communicated a paper on Obliterative Arteritis leading to Gangrene of the Extremities in otherwise healthy men in the prime of life. The patient, a cigarette-maker, aged 39 years, a Jew from Roumania, had had his right leg amputated below the knee in 1889 after having suffered for over a year from severe pain in the foot and the muscles of the calf accompanied by a kind of "intermittent claudication" of the extremity. In June, 1903, he began to suffer in a similar way in the left lower extremity and in October, 1904, owing to a certain amount of gangrene together with intolerable pain and at the patient's repeated request, other treatment having been found useless, the left leg was amputated below the knee at the German Hospital. Since then the patient had been free from pain and the wound had healed well. Examination of the amputated extremity showed that the lumen of the popliteal artery was obliterated by connective tissue, apparently mainly resulting from organisation of a clot; the arteria dorsalis pedis showed extreme endarteritis obliterans. No changes were found in the veins or the nerves. Professor J. Israel had recently drawn attention to an idiopathic gangrene of the lower extremities occurring in men between 30 and 40 years of age, especially Russian Jews. Such cases had, according to him, been observed at Berlin, Königsberg, and Dorpat. Dr. Michels and Dr. Weber knew of three cases in London in poor East-end Jews, all of them between 30 and 40 years of age. There was no evidence that the affection was due to syphilis, alcoholism, renal disease, saturnism, ergotism, or premature senility. It was a question whether excessive cigarette smoking could play a part in the etiology—that is to say, in specially predisposed individuals.

## LIVERPOOL MEDICAL INSTITUTION.

*Bradycardia.—Prostatectomy.—Radical Mastoid Operation.*

A MEETING of this society was held on March 30th, Dr. JAMES BARR, the President, being in the chair.

Dr. JOHN HAY read a note on Bradycardia in which special reference was made to that form of pulsus rarus caused by "heart block." He described in detail the case of a man, aged 26 years, in whom the rhythm of the auricles was independent of, and different from, that of the ventricles. The following were the important features of the case. 1. Marked infrequency of the pulse, which varied from 17 to 30 beats per minute. 2. Transient loss of consciousness associated with disappearance of the pulse at the wrist. 3. Auricular contractions occurring much more frequently than, and independently of, ventricular contractions. 4. An enormous heart, weighing 29 ounces. The necropsy revealed no cause for this increased size. The heart was exhibited and also a drawing of it made by Dr. A. Keith of London, who was of opinion that there was a stretching of the auricular canal and also an attenuation of the bond between the base of the tricuspid valve and the base of the ventricle. The second case was that of a man, aged 62 years, in whom the heart block was not complete. There was marked depression of conductivity, the time taken by the stimulus to pass from the auricle to the ventricle being double its normal length. As a result of this only every other contraction of the auricles was able to excite the ventricles to respond. The pulse-rate was 32 per minute and although the patient was apparently in good health he had a very much diminished area of cardiac response. The note was illustrated by charts, diagrams, pulse tracings, and lantern slides.—Dr. W. B. WARRINGTON, Dr. C. J. MACALISTER, Dr. R. J. M. BUCHANAN, and Dr. W. CARTER took part in the discussion.

Mr. ROBERT A. BICKERSTETH read a note on Prostatectomy and after quoting histories of cases in illustration of his remarks he discussed the circumstances which should guide the surgeon in his choice between the suprapubic and the perineal routes. He pointed out the necessity for a very full and careful examination of each individual case and showed how it was generally possible in this way to distinguish in advance between those prostates which were easily removable and others in which removal might be a matter of very considerable difficulty. For the easier cases, which comprise the fibro-adenomatous enlargements and form the bulk of the cases requiring operation, the suprapubic operation, and enucleation after Mr. P. J. Freyer's method, was certainly the operation of choice. There remained other cases, however, in which it seemed likely that enucleation with the finger would be either very difficult or altogether impossible; for these the perineal operation was best, a transverse incision securing a full exposure and a good view of all the parts concerned. Lantern slides illustrating the successive stages of such a perineal operation were shown and the general indications for prostatectomy were further discussed.—Remarks were made by Mr. C. A. BALLANCE (London) and Mr. D. DOUGLAS-CRAWFORD.

Mr. HUGH E. JONES read a paper on the Difficulties and Dangers of the Radical Mastoid Operation. After defining the operation and referring to the work of Schwarze, Stacke, Küster, and Ballance, he enumerated the difficulties peculiar to this operation: (1) the selection of suitable cases, which consisted in (*a*) limiting the complete operation to cases which really required it; (*b*) deciding whether to operate or not on cases where there was grave general disease; (2) avoidable difficulties on the part of the operator, such as working in a poor light or without an intimate knowledge of the anatomy of the part; and (3) unavoidable difficulties—e.g., variations in the position and size of the antrum, sclerosis of the bone, and a forward position of the lateral sinus. The facial nerve was the most important structure to avoid and there were several ways in which it might be injured: (1) by the faulty introduction or careless holding of Stacke's protector; (2) by the too free removal of the posterior wall of the meatus at its inner end; (3) the bone if brittle might be cracked by the chisel at a point not intended; (4) by careless curetting in the region of the fossa ovalis and sinus tympani; and (5) by curetting cells or fistulæ in the lower deep anterior part of the petro-mastoid or posterior wall of the meatus. The difficulties of skin grafting, provided the whole of the disease had been eradicated, were purely technical and could be overcome by practice and patience. Packing was advocated in cases in which it was not certain that the whole of the diseased tissue had been removed. The dangers peculiar to the operation were classified as follows: 1. Those arising from coincident general disease—e.g., advanced tuberculosis, diabetes, marasmus, and congenital syphilis in infants. 2. Coincident undetected intracranial disease—e.g., serous meningitis, latent cerebral abscess, and acute cerebral abscess. 3. Pathological conditions within the temporal bone might be stirred up and cause an extension of the septic process which might result in suppurative meningitis or sinus phlebitis. 4. Leaving foci of infection by incomplete operation. This was perhaps the greatest danger of all. It was the duty of the operator, whether a general surgeon or an otologist, not only to be prepared to face and to learn to master any of the difficulties and dangers enumerated but also to see his patient safely through to a complete and final healing of the wound.—

Mr. BALLANCE also read a paper on the same subject.—Dr. W. MILLIGAN said that the fundamental principles of surgery should be adopted in the treatment of septic disease of the temporal bone—viz., free exposure of the diseased area and the establishment of free drainage. The peculiar anatomical difficulties of this region should be studied very carefully before undertaking the radical operation. He exhibited various sections of the temporal bone in order to demonstrate some of the difficulties described by Mr. Jones. The treatment of the soft parts was of the utmost importance and he was an enthusiastic advocate of the grafting operation, which not only materially diminished the length of the after-treatment but secured more certain results, especially in so far as the healing of the inner tympanic wall was concerned. Continuous and light packing was irksome to the patient and to the surgeon and he was inclined to think that it tended to promote rather than to retard the growth of exuberant granulation tissue. In the treatment of tuberculous cases he advocated in the first instance merely providing efficient retro-auricular drainage, together with the removal of sequestra and later, when the general condition of the patient had improved, the performance of the radical operation.—Mr W. THELWALL THOMAS, Mr. E. M. STOCKDALE, Dr. EDGAR STEVENSON, Mr. J. BARK, and Dr. WARRINGTON also took part in the discussion.

## ROYAL ACADEMY OF MEDICINE IN IRELAND.

### SECTION OF PATHOLOGY.

*Exhibition of Specimens.*

A MEETING of this section was held on March 17th, Dr. H. C. EARL, the President of the section, being in the chair.

Sir W. THORNLEY STOKER, President of the Academy, exhibited specimens of a Columnar Cell Carcinoma of the Uterus in a very early stage and a Columnar Cell Carcinoma of the Rectum and Sigmoid Flexure also involving the left ovary.

The PRESIDENT of the section made a communication on cases of Human Actinomycosis and showed specimens from a case of Actinomycosis of the Right Kidney with a metastatic abscess in the cerebrum. He mentioned that many of the peculiar yellow grains were made up of dead organisms and cultivations were therefore not easy to obtain. He considered that the increase in the number of cases reported was due to better observation.—Mr. K. E. L. G. GUNN related particulars of cases which he had seen and also mentioned a case where, owing to the discovery of mycelial threads in the discharge, a mistaken diagnosis of actinomycosis of the rectum was given. Later the disease proved to be carcinoma.—Dr. T. P. C. KIRKPATRICK mentioned a somewhat similar case occurring in the lip where a diagnosis of actinomycosis was at first made but subsequently this also was shown to be cancer.

Mr. ARTHUR H. BENSON and Dr. H. C. MOONEY showed sections of a Sarcoma of the Conjunctiva which formed a black tumour, of the size of a split pea, and had been removed from the conjunctiva of a married woman, aged 40 years. It was growing by a rather small pedicle from the conjunctiva of the globe, close to the sclero-corneal margin at the outer side of the left eye. The patient stated that she first noticed it 11 years ago as a very small dark reddish spot. For the past five years it had grown steadily but very slowly and some large vessels ran to its base. It was capable of being raised up with the ocular conjunctiva and was excised with scissors, leaving what appeared to be a perfectly healthy conjunctiva below it. The origin of the growth seemed to have been one of the small collections of pigment sometimes seen in a perfectly healthy conjunctiva. Its extremely slow growth, its low degree of malignancy, and its limitation entirely to the conjunctiva were remarkable.—Dr. MOONEY, who had made sections of the tumour, said that it was composed of two parts, the larger one consisting of small spindle-celled pigmented sarcoma, the pigment being abundant, particularly near the periphery and round an excentrically placed non pigmented area. This non-pigmented area or core which was placed towards the base of the tumour, was made up of large swollen-looking epithelioid cells, loosely arranged with plentiful intercellular substance. Many of these cells had one or two vacuoles. The conjunctiva covering the tumour was for the most part thickened and at places cornified.

Mr. GUNN showed a specimen of Gangrenous Intussusception removed from a child; and sections, together with a model, of a Cancer of the Prostate implicating the wall of the bladder.

### LEEDS AND WEST RIDING MEDICO-CHIRURICAL SOCIETY.

—A clinical meeting of this society was held on March 17th, Mr. E. Ward being in the chair.—Mr. H. Secker Walker showed two cases of Chronic Otorrhœa, the one being complicated with cerebral and the other with cerebellar abscess. Improvement followed on drainage of the abscesses. The patients were boys aged respectively ten and 14 years.—Mr. A. L. Whitehead showed a case of Retinitis Pigmentosa with Posterior Pyramidal Cataract, Degeneration of the Vitreous, and Optic Atrophy.—Mr. G. Constable Hayes showed a case of Optic Atrophy in a patient suffering from early locomotor ataxy. There was a three months' history of gradual loss of vision but the patient otherwise felt quite well. There was no history of syphilis. The symptoms observed were optic atrophy (with some choroido-retinitis), Argyll Robertson pupil, and loss of patellar reflexes.—Mr. Ward showed a man, aged 42 years, suffering from Gonorrhœal Stricture of the Urethra of 20 years' duration. 12 months ago abscesses formed in the perineum, burst, and formed again, and urine was passed through the abscess cavity. On Jan. 11th the stricture was completely excised, the piece removed being one inch long. The whole was imbedded in thick suppuratory tissue which broke down under pressure. The ends were united in the upper wall and a tube was put into the bladder. On March 7th a 9-12 instrument was passed without pain and without encountering any stricture.—Mr. H. Littlewood showed two cases of Colectomy for Malignant Disease of the Splenic Flexure, a case of Colotomy, a case of Splenectomy for Large Moveable Spleen producing several attacks of intestinal obstruction, a case of Splenectomy for Traumatic Dislocation of the Spleen with Twisted Pedicle, and a case of Pyloroplasty.—Mr. R. Lawford Knaggs showed a case of Appendicitis with Abscess, Fæcal Fistula, Pyopneumothorax, and Gastric Fistula. The patient, who was 13 years of age, began to suffer from acute abdominal symptoms on June 5th, 1904. On June 15th the contents of a pelvic abscess measuring three pints were evacuated through a median incision. On July 27th a fresh abscess reaching into the pelvis was opened and the appendix with concretions was removed. On August 8th the patient expectorated ten ounces of very foul sputum, following some lung symptoms. An empyema was localised at the left base. This suddenly became tympanitic and was incised on August 11th. On the 18th food began to come through the empyema opening almost directly it was taken. On Oct. 1st the patient was quite well, except for slight fæcal fistula which had since closed. Mr. Knaggs also showed a case of Punctured Fracture of the Orbital Plate of the Left Frontal Bone followed by Cerebral Abscess. The patient was admitted to hospital on June 11th, 1904, with a bone crochet hook transfixing the upper lip and orbit for three inches. The hook was removed. The orbital periosteum was separated and the aperture in the orbital plate of the frontal bone was exposed. The frontal bone was trephined, the left frontal lobe in the dura mater was raised, and the aperture in the dura mater was exposed. A small spicule of bone was removed from inside the aperture. Satisfactory progress was made till July when double optic neuritis, vomiting, and coma developed. On July 11th a second operation was performed. The frontal lobe bulged prominently on opening the dura mater. The results of exploration were negative and the flap was replaced. On the 15th a quantity of pus having a faint odour escaped by the drainage apertures. The protrusion of the brain, which had been increasing, began to diminish. Steady improvement followed and the patient was quite well on August 7th.—Mr. Walter Thompson showed a case of Rupture of the Small Intestine. The patient was a man, aged 20 years, who received a wound of the abdomen one and a half inches above the pubes, the left rectus being ruptured but the peritoneum not opened. There was blood in the cavity. Two ruptures were found in the small intestine about six feet apart. There was extensive laceration of the mesentery. 6 feet 6 inches of the small intestine were resected and union was accomplished by end-to-end anastomosis. A small peritoneal rupture in the sigmoid region

was closed by suture.—Mr. H. Collinson showed a case of Compound Comminuted Fracture of the Humerus with Rupture of the Musculo-spiral Nerve.—Dr. T. Churton showed cases of Monocular Diplopia, Primary Optic Atrophy, and Osteo-arthritis or Charcot's Joints. He also showed (with Dr. S. G. Scott) a case of (?) Acute Lymphatic Leukæmia.—Dr. A. G. Barrs showed a case of Spleno-medullary Leucocythæmia much benefited by the x ray treatment. The patient was a man, aged 43 years, of indoor employment. During the last four years he had experienced want of energy, early fatigue, and a gradual loss of one and a half stones in weight. During the last 12 months he had felt a dull aching pain on the left side of the body. Treatment with the x rays was begun on Feb. 7th, the exposure being given for ten minutes on alternate days over the abdomen and the knees. This was continued for 21 days. Thereafter the back was substituted for the abdomen. Some x ray irritation and folliculitis leaving pigmentation appeared on the abdomen three days after the abdominal applications were discontinued. After 20 days the white cells were only a quarter of the number they were at first. The polymorphonuclear neutrophiles increased from 61·6 to 83·2 per cent. The myelocytes decreased from 31·8 to 7·6 per cent. The spleen became first softer and then smaller; it was now about half its former size.—Dr. C. M. Chadwick showed a case of Multiple Tumours of the Abdomen and one of Cerebellar Tumour.—Dr. T. Wardrop Griffith showed cases of Early Disseminated Sclerosis, Hemiplegia (Anomalous), Primary Lateral Sclerosis, Disseminated Sclerosis, and Multiple Sarcomata.—Dr. E. F. Trevelyan showed two cases of Supposed Spinal Syphilis in men, also cases of Early General Paralysis, Localised Paralysis of the Extensor Communis Digitorum, and a case of Paralysis Agitans in a man, aged 50 years, coming on shortly after a severe injury to the head.—Dr. Carlton Oldfield showed a case of Birth Palsy. The child was helpless in mind and body. Although three and a half years old she behaved like an infant of five or six months. She had no speech but could hear well. The limbs could be moved freely but they were of no use because of their spasticity. Sensation was unaffected. Trophic disturbances were absent. The bladder and the rectum were quite under control. There was no tremor or athetosis.—Dr. W. H. Maxwell Telling showed a case of External Gastric Fistula. The patient was a woman, aged 34 years, who had suffered from dyspepsia since the age of 16 years. Symptoms of gastric ulcer (pain, vomiting, hæmatemesis), appeared between the ages of 22 and 25 years. At 25 years of age (July, 1896) she was admitted to Leeds Infirmary for these symptoms and loss of weight, together with "epigastric swelling" in the situation of the present fistula. This was a small, hard, tender mass, with the skin not adherent; it had appeared two weeks before. She improved considerably, gaining two stones in weight. On March 4th, 1905, she noticed that her clothes were wet and that liquids swallowed appeared through the fistula. Comment was made on the unusual nature of this case in that there had been no intermediate stage of abscess.—Mr. B. G. A. Moynihan, in discussing the case, drew attention to the fact that these fistulæ only tended to heal spontaneously when there was a sinuous tract of tissue intervening between the ulcer and the external opening.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 21st, Dr. C. F. M. Althorp, the President, being in the chair.—Dr. T. W. Hime read a paper on Compulsory Notification of Infectious Diseases in Bradford during 24 years considered as a preventive measure, with comparative reference to other towns. Dr. Hime pointed out that it was thought at the time of its introduction that compulsory notification would be the means of completely blotting out infectious diseases. As a matter of fact, however, since that time scarlet fever, enteric fever, and diphtheria had steadily increased year by year. He could not point to any remedy but he thought it was high time that steps should be taken to deal with these diseases.—Dr. J. T. Neech, medical officer of health of Halifax, said that there was a wide field for thought and reflection. He believed that many cases of so-called diphtheria were not diphtheria at all. Recently a special diplococcus had been found in the throat in these cases which required investigation.—Dr. S. G. Moore, medical officer of health of Huddersfield, doubted whether the increase was due to the fact that more cases were notified now than was formerly the case. Many cases of so-called measles which were really scarlet fever were not notified at all.—Mr. H. Shackleton, Dr. R. H. Crowley, Dr. J. T. Kitchin, Dr. W. Scatterty, and Dr. F. W. Eurich also spoke.—Dr. Hime replied.——A meeting was held on March 18th at the Royal Infirmary, the President being in the chair.—The following pathological specimens were exhibited:—The President: (1) A Gall-bladder with 2505 Gall-stones removed from it; and (2) a Gall-bladder and Gall-stones removed from the Cystic, the Hepatic, and the Common Ducts.—Dr. H. J. Campbell: Stereoscopic Views of Specimens of medico-legal interest.—Dr. Crowley: (1) Colon with Perforation from a case of Ulcerative Colitis; (2) Perforation of a Tuberculous Ulcer of a Portion of the Intestine in the Sac of an Inguinal Hernia; (3) New Growth of the Trachea; (4) Carcinoma of the Lung; (5) Carcinoma of the Stomach; (6) Carcinoma of the Pancreas with Secondary Growths in the Liver; (7) Heart with Ulcerative Endocarditis; (8) Extensive Softening of the Brain, due to syphilitic arteritis; (9) Gumma of the Spleen; and (10) Liver and Spleen from a case of Banti's Disease.—Dr. Eurich: Microscopical Demonstration: (1) Neuroglia Scavenger Cells; (2) Calcification of Nerve Cells; (3) Elastic Fibre Stain (inflamed skin); (4) Degenerating Nerve Cells (spinal cord); (5) Persistent Thymus; (6) Ova of Bilharzia; (7) Actinomyces; (8) Fat stained with Sudan; (9) Senile Choroid Plexus; (10) Unusual Tuberculous Sputum; (11) Anthrax Spores; and (12) Anthrax Bacillus in tissues, &c. Various Cultures, &c., of Bacteria—especially the differentiation between the typhoid bacillus and allied species. Pathological Specimens: (1) Tuberculous Ulcers of the Intestine and Tabes Mesenterica; (2) Tuberculous Tumours in the Human Liver; (3) Tuberculosis of the Liver, the Spleen, and the Kidneys of the Pig; (4) Ovarian Cystoma; (5) Extensive Subarachnoid Hæmorrhage (Anthrax); (6) Laryngeal Diphtheria with Interstitial Emphysema; (7) Pericarditis; (8) Partial Placenta Prævia (fourth month); and (9) Hæmorrhage into the Spinal Cord and other preparations.—Mr. J. Basil Hall: (1) Specimens of Myoma Uteri removed by Abdominal Hysterectomy; (2) Specimens of Carcinoma Uteri removed by Abdominal Hysterectomy; (3) Epithelioma of the Colon from a case in which the Transverse Colon and part of the Bladder were excised; (4) Ovarian Cyst becoming Gangrenous from Torsion of the Pedicle; (5) Growth of the Cheek implanted during the removal of an Epithelioma of the Palate and Tonsil; (6) Tumour of the Testis; (7) Sarcoma of the Axilla; and (8) Growth of the Penis.—Mr. W. H. Horrocks: (1) Sarcoma of the Testis; (2) Ectopic Gestation; and (3) Fibroma Uteri.—Dr. Rabagliati: (1) Four cases of Abdominal Hysterectomy; and (2) Two specimens of Myoma from Hysterectomy.—Dr. T. J. Wood: (1) Hydatiform Degeneration of the Chorion; (2) Hypertrophied Prostate removed by Operation; (3) Liver showing Calcified Hydatid Cyst which caused no symptoms till accidentally ruptured; (4) Bladder and Kidneys showing Tuberculous Disease; (5) Epithelioma of the Lower Jaw from a woman, aged 36 years; (6) Ovarian Cystoma with Papillary Growths; (7) Suppurating Ovarian Cyst with great Enlargement of the Fallopian Tube; (8) Vesical Calculi; (9) Renal Calculi; and (10) Biliary Calculi from the Common Bile Duct and Cystic Duct.

CLINICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on March 21st at the Palatine Hotel. Dr. E. S. Reynolds being in the chair.—Dr. H. Ashby opened a discussion on Vomiting in Infants and after briefly describing the structure, movements, and innervation of the stomach pointed out that vomiting, being a reflex act, might be physiological or pathological, or might partake of the character of both. As a physiological reflex it might be useful in overloaded stomachs; as a pathological reflex it might indicate cerebral or other disease. It might take place by the contraction of the stomach alone or by the abdominal muscles, or by the union of both. Chronic vomiting or regurgitation shortly after food was of no significance unless it was accompanied by loss of weight and might be looked on as a safety-valve action. In such cases less food should be given. If accompanied by loss of weight and it succeeded an acute gastritis it was often most obstinate, as there were extreme irritability of the stomach and impaired power of digestion. A residue of food, mostly curd, always remained in the stomach after the digestive process had ended. This decomposed and fermented and when another meal was given this condition became worse and a habit

of vomiting was established. Such cases in hospital required months for cure; they were usually chronic gastric catarrh with extreme gastric irritability; the ferment was active, pepsine and hydrochloric acid were scanty, and the muscular walls were inactive; lactic, butyric, and other acids were present and remained long in the stomach with the decomposing curd. Usually vomiting occurred but sometimes a few meals were retained. The prognosis was bad, especially in infants under three months old. Dr. Ashby advised in these cases regular washing of the stomach, with abstinence from food for the first 24 hours, a little sugar and water being given, afterwards whey, alone or mixed with a little cream or milk, and barley water, the latter being properly and freshly prepared. He had found considerable success with asses' milk and recommended small doses of morphine or tincture of opium. He referred to a class of cases which were probably congenital pyloric stenosis, which went on well for the first week or two after birth, and then vomiting began and consisted of the food taken and mucus; there was no bile; the stools were infrequent and contained no remains of food. The advisability of operations, such as pylorectomy, was discussed and if the diagnosis was assured operation was recommended. Cases classed as "recurrent vomiting" were referred to. Vomiting occurred at intervals more or less long, without any other gastric symptoms, or if present only slight; sometimes there was fever but generally none, otherwise the health was good, but after any attack there was extreme prostration without any apparent lesion. In these cases recovery was the rule. In toxin poisoning the vomiting mostly came on suddenly after a day or two of languor; the vomited matter consisted of bile and mucus tinged with blood; there was extreme prostration, the abdomen was flat or retracted, and there was no increase of temperature or abdominal pain.—Dr. R. W. Marsden thought that though dilution with barley water might cause the curd to be deposited in finer particles, yet the belief in the necessity or advisability of its use was too much impressed on the public mind. It might be that the poorer classes in many instances did not make the infusion with sufficient care or did not strain it adequately, but certainly there were some cases which did better by the substitution of the same degree of dilution by plain water. As a supplementary aid to the giving of a much needed rest to the stomach in certain cases Dr. Marsden spoke of the value of the administration of sweetened water continued over several days until the evidence of toxæmia had passed away and the stomach and intestines had returned to a more normal condition.—Dr. P. R. Cooper, Dr. A. J. Rodocanachi, and Mr. G. H. Broadbent joined in the discussion, and Dr. Ashby replied.

KIDDERMINSTER MEDICAL SOCIETY.—A meeting of this society was held on March 31st, Mr. C. Dennis Fitch, the President, being in the chair.—Mr. J. Lionel Stretton showed: 1. A man, aged 49 years, who was admitted to the hospital suffering from an Incised Wound at the Back of the Wrist caused by a piece of granite flying against it when he was stone-breaking. His fingers were flexed and he was unable to extend them. On opening the wound it was found that the three tendons of the extensor communis digitorum and the tendon of the extensor indicis were all divided as they passed through their compartment of the annular ligament. They were sutured with catgut and now (after two months) the man had good extension movement. 2. 30 Gall-stones weighing 80 grains removed from a woman, aged 40 years. 3. A small irregularly shaped Gall-stone removed from the Cystic Duct of a woman, aged 46 years. She had a severe attack of hæmatemesis nine years ago and had been unable to take solid food since. Within a fortnight of the operation she was able to take full meals without discomfort. 4. Two Appendices. The first was extensively gangrenous, with a large perforation. The patient, a man, aged 24 years, had only been ill three days; when operated upon there was a considerable amount of peritonitis. The second showed a horse-shoe-shaped appendix with a constriction; it was removed in the quiescent stage from a girl whose right kidney was at the same time stitched to the loin to prevent its undue mobility. Recovery was uneventful.—Dr. Bertram Addenbrooke showed: 1. A woman, aged 32 years, who had been suffering from pulmonary tuberculosis for three years. The disease had caused so much contraction of the left apex of the lung that the heart was drawn up so that its apex beat was in the third intercostal space. 2. An Appendix which had been removed from a patient who had had two attacks of appendicitis. The appendix was adherent and there was a small abscess. 3. A Large Nasal Polypus. 4. A Large Cervical Gland which shelled out.—Dr. D. G. Dykes showed a woman suffering from Peripheral Neuritis. The patient had suffered from sickness and vomiting for several years. 12 months previously she was treated for gastric ulcer and had improved. Five months previously the pain in the stomach and the vomiting returned. The bowels were very constipated; she thought that they had been moved twice in the last four weeks. In the middle of December last she had pain in the wrists and the ankles, travelling up the forearms and the legs, with gradual loss of power and inability to straighten the fingers and to extend the hand on the forearm. The left foot was affected in a similar manner, though less severely. She had lost flesh rapidly during the last few months. All her teeth had been extracted five months before. The patient was very anæmic and emaciated. As regards the nervous system there was marked tenderness along the ulnar and the median nerves of both forearms and the external popliteal nerve of the left leg. The knee-jerks of both legs were greatly exaggerated. The triceps jerk was distinctly present. There was slight anæsthesia of the three inner fingers of the left hand and also of the right. She could not extend the fingers at all and the power of extension of both hands and the left foot was greatly diminished. The pupils responded to light and accommodation. Two slight blue specks were visible on the gums. The patient, a married woman, had had five children, two living and three dead, and latterly several miscarriages.—Mr. Stretton read an interesting paper on Antisepsis and Asepsis which gave rise to considerable discussion.—Mr. E. S. Robinson referred to some cases of Hospital Abuse which had come to his notice.

# Reviews and Notices of Books.

*A Text-book of Physiological Chemistry for Students of Medicine and Physicians.* By CHARLES E. SIMON, M.D. Second edition, revised and enlarged. London: J. and A. Churchill. 1905. Pp. 500. Price 14*s*.

THE vigorous prosecution of chemical research which is being carried on throughout the world is responsible for continuous contributions to our knowledge of physiological functions and the result is that although a text-book may be in line with modern advance when published it must soon undergo revision in the light of this rapidly increasing knowledge. Important papers appear in literature embodying results of research work which give a deeper insight as time goes on into the nature of physiological processes and products. The first edition of the work before us was issued in 1901 and the author soon recognised that a complete revision of many sections was imperative and especially of those dealing with the albumins, the products of nitrogenous katabolism, and gastric and tryptic digestion. The result is an excellent work in which the reader may rely upon the account of the subject being in accordance with modern views and research. It is a pity, however, we think, that all exact reference to literature has been omitted. One decided advantage of the book is that the author does not enter at any length into theoretical discussions, preferring to present ascertained facts as concisely as the importance of the problem under consideration appears to require. This may account for the chemical aspect of the subject receiving more detailed consideration than the purely physiological side. After all, it is difficult to say where chemistry ends and physiology begins; but certain it is that the functions of the body cannot be understood before a very good knowledge of the former science has been gained. The author begins by giving a general survey of the origin and the chemical nature of the three great classes of foodstuffs—carbohydrates, fats, and proteids. His *résumé* of the observations which throw light upon the nature of the synthesis of these foodstuffs is

admirable and in complete accordance with recent investigations. Next naturally follows a consideration of the most important products of the decomposition of foodstuffs. This is followed by a section dealing with the processes of digestion, resorption, and excretion; and lastly, comes the chemical study of the elementary tissues and the various organs of the animal body, the specific products of their activity, and their relation to physiological functions.

The practical parts of the book, such as those which relate to quantitative and qualitative analysis, are well done and the tests for the products of albuminous digestion are particularly well described and up to date. In regard to the analysis of milk, however, the author might have added a short description of simpler and more satisfactory methods of estimating the fat in milk than those which he has given. The same remark applies to the methods recommended for the estimation of sugar in urine. He omits to mention Pavy's modification of the Fehling test and also the excellent method in which the double cyanide of copper and potassium is used. In our opinion the cyanide method is the most satisfactory, while a convenient modification of Fehling's method consists in adding chalk to the copper mixture. In that case the change of colour is more readily seen, as the chalk rapidly subsides and carries the red cuprous oxide with it. The appendix contains a number of useful laboratory exercises. Here the directions given are somewhat terse and the number of exercises, we think, might have been amplified with advantage. But we recognise the difficulty of keeping a work of this kind within limits. As it stands the book is an excellent practical work, clearly written, and brought into line with modern advance.

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*Handbuch der Tropenkrankheiten. (Handbook of Tropical Diseases.)* Edited by Dr. CARL MEUSE of Kassel. Leipsic: Johann Ambrosius Barth. 1905. Band I. Pp. 337.

ALTHOUGH the German race may not possess so great an innate capacity for colonisation in hot climates as we have it must be confessed that they make the most of their experiences in tropical medicine and produce therefrom thorough treatises on the subject. We have already had three editions of the encyclopædic work of Scheube. The latest work published is that under review. It constitutes the first of three volumes that are to appear from the hands of collaborators who are all well known to medical science. We are glad to see that Major W. B. Leishman, R.A.M.C., and also Dr. W. G. MacCallum of Baltimore and Dr. Carroll of Baltimore are amongst the contributors. This volume is devoted to the subject of the tropical diseases of the skin, of the affections produced by worms, of the diseases of the nerves, and of the "intoxication" diseases caused by poisonous plants and by the poisons due to the animal kingdom. The second volume is to deal with the infectious diseases, and the third with affections produced by protozoa.

Dr. Albert Plehn writes on the affections of the skin. This section is thoroughly up to date, containing as it does an account of veldt sores and climatic bubo. The section treating of the former is the most comprehensive one that we have yet read. As regards the etiology of climatic buboes the author does not believe in the theory of Cantlie as to their relationship with plague as they have been observed amongst sailors on board ship who have never come into contact with cases of plague. He upholds the view of Verth that they arise through infection by pus micrococci consequent on small rhagades or cracks in the skin. The fungus diseases are well described and an especially good section is that on tinea imbricata. With regard to yaws, the author points out that there are two chief views respecting its etiology. Scheube and Hutchinson look upon the disease as a form of syphilis modified by race and climate. The other theory is that it is a specific affection of the skin *sui generis* which has nothing to do with syphilis and which can remain local. This latter view is supported by the experiments of Charlonis. Dr. Bestion has also known natives who have had yaws to be infected later with syphilis. Dr. Plehn considers it to be improbable that yaws is a product of syphilis. He also shows that the histology of the two affections does not coincide—yaws starting from the epidermis whilst syphilis does so from the connective tissue of the cutis. The cells are more loosely aggregated in yaws and are separated by spaces. The minute arterial changes of syphilis are also not seen. This section on tropical diseases of the skin is very complete and includes even such local diseases as "khi-huen." It is illustrated by excellent plates, amongst which we may especially draw attention to those of Goundon.

To Dr. A. Looss of Cairo has been intrusted the section on the diseases caused by worms and arthropods. This part of the work is also illustrated with beautifully drawn plates. The classes of worms which attack man are the trematodes, the cestodes, and the nematodes. The section on Bilharziosis is one of the best in the volume, the explanatory plates being excellent. This part of the work was evidently written before the publication of Catto's work on his newly discovered schizotoma. No mention is made of the treatment by methyl blue; probably Dr. Looss has had no better results than have others who have tried it, although it has certainly been successful in some cases. The part of the work dealing with ankylostomiasis leaves nothing to be desired; with regard to treatment thymol or extract of male fern here as elsewhere is recommended.

We next come to the subject of Filariasis. A remarkable plate of elephantiasis of the mamma is given. Sir Stephen Mackenzie's well known experiment in a case under his care at the London Hospital of turning night into day, with the consequent reversal of the time of appearance of the parasites in the blood, is related, whilst due attention is paid to all the different varieties of filariæ. The best treatment of guinea-worms—namely, that by the injection of corrosive sublimate solution into the neighbouring parts—is recommended. We have certainly seen much better results by this treatment than by the old way of slowly winding the worm on a match stick; in one case on the day after the injection the whole worm was found lying outside under the dressing. An excellent plate is given of the various eggs of parasites found in the fæces. Diseases of the nerves are dealt with by Dr. P. C. J. van Brero of Java. They include latah, spastic vaso-motor rhinitis, heat stroke, running amuck, and various psychoses. The section on heat stroke is not altogether satisfactory.

The last chapters are devoted to intoxication due to plants, drugs, snakes, and the various members of the animal kingdom. An excellent *résumé* of the treatment by antivenene is given. In concluding we can only say that if the succeeding volumes maintain the standard of excellence of the first the student of tropical medicine is to be congratulated.

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## LIBRARY TABLE.

*Cold Catching: Cause and Cure. With Golden Rules Index.* By G. W. BACON, F.R.G.S. Revised by W. T. FERNIE, M.D. Durh. Second edition (revised). London: G. W. Bacon and Co. 1905. Pp. 45. Price, limp cloth, 6*d.* net.; cloth, 1*s.* net.—In this little book the author restates the old, well-known truth that "persons who are always catching cold will generally be found among those whose physical condition has been enfeebled and whose vitality is low through certain of the laws of health having been disregarded." His aims are to urge the importance of keeping the vital powers up to par so as to resist the attack of cold and to emphasise the necessity of treating a cold

from the first hour after it is known to be contracted, when it readily yields to simple management; also that it is often a dangerous thing to leave a cold to take care of itself. "The Golden Rules Index" is contained on five pages and is a summary of the entire book "as an aid to the memory." The five chapters into which the book is divided deal successively with the nature and treatment of colds; with hints on cleanliness and bathing; with hints on clothing; with pure air and ventilation; and with alcohol and its relation to health and cold. The text is sound and sensible and the treatment recommended is judicious.

*The Sewage Problem: A Review of the Evidence Collected by the Royal Commission on Sewage Disposal.* By ARTHUR J. MARTIN, Assoc.M.Inst.C.E., M.R.San.I. London: The Sanitary Publishing Co., Limited. 1905. Pp. 363. Price 8*s.* 6*d.*—The evidence so far taken before the Royal Commission on Sewage Disposal amounts to a very valuable collection of practical information upon the subject. The Commission was appointed early in the year 1898 and its labours are not yet concluded. It has, however, issued several reports which are calculated to give considerable assistance to those local authorities who have to face the question of sewage disposal. Everyone knows what a difficult task it is to extract complete information upon any given point from a mass of evidence. Mr. Arthur J. Martin has immensely simplified this task for those who seek information on the sewage problem by publishing in the volume before us a digest of the more important evidence on some of the practical points which are dealt with. He has written a continuous story in which certain paragraphs of evidence are inserted so that, as he says, the witnesses so far as possible speak for themselves. The result is a book in which the present position of the question is clearly reviewed. The author's task could not have been light and he has kept the several branches of the subject quite distinct and has succeeded in quoting just that evidence which is required. Further, he has dealt with the whole question, so far as it has been investigated by the Royal Commissioners, with an open mind. This labour of scientific compilation will be widely appreciated by all those concerned in this great sanitary question.

*Practical Exercises in Chemical Physiology and Histology.* Arranged by H. B. LACEY and C. A. PANNETT, B.Sc. Lond. Cambridge: W. Heffer and Sons. London: Simpkin, Marshall, and Co. 1904. Pp. 112. Price 2*s.*—This book consists of a compilation of practical exercises in chemical physiology and histology, the authors having drawn upon several well-known standard works on the various branches of the subject. The work should, therefore, be convenient to the student commencing a course of practical physiology and histology. Whilst not presenting any novel feature in the plan adopted or offering any new observations the exercises bear the impression of having been tested practically by the authors. The exercises are admittedly arranged to meet the requirements of students preparing for the physiology examination, stages I., II., and III. and Honours, of the Science Department of the Board of Education. The examples given of quantitative analysis are few and somewhat prosaic.

*Neolithic Dew Ponds and Cattle Ways.* By ARTHUR JOHN HUBBARD, M.D. Durh., and GEORGE HUBBARD, F.S.A. London: Longmans, Green, and Co. 1905. Pp. 71. Price 3*s.* 6*d.* net.—The memorials of our primitive ancestors have an abiding interest for us who are alive at the present day and these little islands are very rich in such memorials. Scattered over nearly the whole of the south of England are many so-called "British camps" and of these two are specially notable—namely, Chanctonbury and Cissbury Rings on the South Downs. With these gigantic earthworks are closely connected that curious feature of a down country, the dew ponds, and in the book before us Dr. Hubbard and Mr. Hubbard have set themselves to elucidate the connexion between the earthwork, the dew pond, and the cattle track. The physics of a dew pond are first considered and it is pointed out that their perennial supply depends upon the complete insulation of the water-containing area from the surrounding earth. This is effected by means of a layer of dry straw which is then covered with finely puddled clay. Such a pond loses heat rapidly at night, thus bringing about condensation of the atmospheric moisture. In reference to this point an interesting letter appeared in our contemporary *Nature* of Sept. 20th, 1900, in which the writer, Mr. Arthur Marshall, put forward the theory that a difference of electrical tension was responsible for the deposition. During the night of April 1st, 1899, he exposed two porcelain basins on a ridge of the South Downs. These basins were supported by silk threads and in each of them was placed a sheet of copper. This sheet was in one case earthed by means of a wire, but in the other case it was insulated by the silk threads although the insulation was imperfect owing to the threads becoming wet. In the morning the basin with the earthed copper contained 18 cubic centimetres of water while the other contained only 15·5 cubic centimetres. It is not, however, the physics of the dew pond which concern Dr. Hubbard and Mr. Hubbard so much as the economic aspects of these structures and they have collected much evidence to show that dew ponds were closely connected with the water-supply both for the dwellers in the earthworks and their cattle. Besides Chanctonbury and Cissbury other earthworks, such as Maiden Castle, Ogbury and Figsbury Rings, are dealt with and also, though it has no connexion with dew ponds, Maumbury Ring. The book is of great interest and well worth reading.

*Exercises in Practical Physiological Chemistry.* By SIDNEY W. COLE, M.A. Cambridge: W. Heffer and Sons. London: Simpkin, Marshall, and Co. 1904. Pp. 152. Price 5*s.*—Text-books on practical analyses are often disappointing in practice inasmuch as it is sometimes found that the directions given in order to obtain a definite result do not succeed. This is invariably due to a want of attention to detail on the part of some writers of text-books when dealing with experimental procedure. There are many chemical tests, for example, which, if they are to succeed, must be conducted in a certain way and frequently it happens that the addition of reagents in a certain order must be observed. The kind of blemish described does not apply to Mr. Cole's exercises and this is not surprising since he has first worked through and obtained the results stated in each and every exercise given in the book. In view of the fact that 248 exercises are thus presented it follows that the author has mastered those details which are essential to a successful issue. The exercises cover more ground than is at present necessary for most examinations in medicine, so that the plan is to give the student a general knowledge and not a mere acquaintance with a part of it which suffices for examinational purposes. The directions in which failure or success may follow are clearly indicated. A somewhat novel plan adopted in the book is presented in the spaces provided at the end in which the student may draw various crystalline forms from preparations made by himself. At the foot of the blank sheets the name and description of the preparation are given. In a similar way a blank chart is provided for recording absorption spectra. Mr. Cole clearly understands how students should be taught practical methods and how their powers of observation should be trained and no more need be said in bringing his book to the notice of those about to commence a course of practical or physiological chemistry.

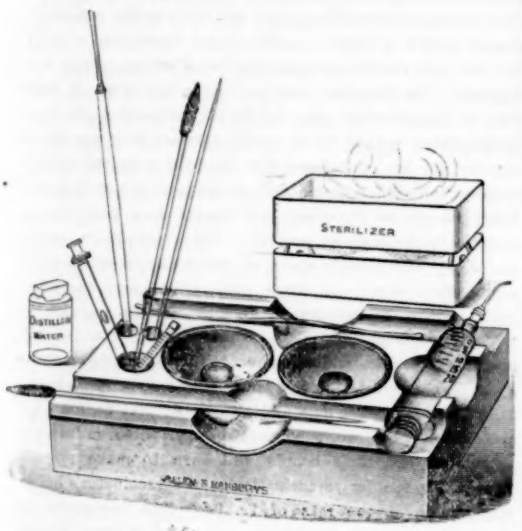
*Simple Methods of Testing Sewage Effluents.* By GEORGE THUDICHUM, F.I.C. London: The Sanitary Publishing

Co. 1904. Pp. 60. Price 2*s.* 6*d.*—This is a handy little guide to the testing of sewage effluents for works' managers, surveyors, and others. The methods are, on the whole, quite simple and are described in terms which should be easily intelligible to those engaged in the management of sewage works. While many analytical processes which are conducted with the view of obtaining an idea of the extent of purification effected by a given process can only be carried out by the trained chemist, there are many simple operations which the intelligent works' manager can perform for himself and which give valuable indications as to the efficiency of the purifying plant. In such a case this book supplies just the information needed and within the limitations indicated.

# New Inventions.

## A NEW DRESSING SLAB.

IN the illustration there is shown a glazed earthenware slab measuring four and three-quarter inches in length by three inches in width by three-quarters of an inch in thickness. It serves as a support for lacrymal or hypodermic syringes, glass rods tipped with wool, probes, and similar instruments. On it there are formed (1) two long shallow grooves and one shorter groove for receiving instruments, each groove being provided with a central bevel; (2) two crater-like depressions capable of holding one fluid drachm, each having at its lowest point a recess of a capacity of five minims whereby a syringe is enabled to draw up the last




drop of the contained solution; and (3) one large and two small wells in which various articles can be placed upright, a syringe or a glass cylinder in the larger well and a glass rod or the nozzle of a syringe in the smaller ones. The lid of the box in which the slab is kept is washable and can be used as a cover for the slab when the latter is standing on the table and the sterilised instruments are *in situ* ready for the surgeon. The slab is easily rendered aseptic by boiling, it cannot be overturned, and will be useful in consulting rooms where small quantities of expensive drugs are employed. The price of the slab is 2*s.* It is supplied by Messrs. Allen and Hanburys, 48, Wigmore-street, London, W.

Harley-street, W. R. E. HANSON, M.A., M.B. Cantab.

# ACCIDENTS (MINES AND FACTORIES) BILL.

WE have received the following letter from the honorary secretary of the Metropolitan Branch of the Association of Certifying Factory Surgeons concerning the above-mentioned Bill, which is down for second reading on April 10th.

OBJECTIONS OF CERTIFYING FACTORY SURGEONS' ASSOCIATION TO ACCIDENTS (MINES AND FACTORIES) BILL AT PRESENT DOWN FOR SECOND READING.

*To the Editors of* THE LANCET.

SIRS,—*Clause 4 proposes* to abolish the systematic investigation into the cause of machinery accidents which is at present carried out by the certifying factory surgeon. As regards the bulk of these accidents the only report received by the Factory Department will be that from the employer.

*Employers' Reports are Misleading.*

We are able to say through our experience that reports received from employers do not form any true guide as to how an accident has occurred; their reports are often misleading and it is against all reason to suppose that an employer will state in his report that an accident is due to his machinery being improperly guarded.

*Clause Unworkable.*

*Sub-clause 3 proposes* that the Secretary of State shall direct that certain accidents be investigated by the certifying surgeon. We believe that this would be quite unworkable and would result in no accidents at all being investigated by him. No matter how carefully drawn up such directions were it would be impossible for the local inspector to tell, having only the employers' report before him, whether a certain accident should be reported to certifying surgeon or not.

We are strongly of opinion that all accidents coming under Clauses *a* and *c*, Section 4, should be investigated. The inspector cannot do this. He is already overworked—in fact, the report on which this Bill is drawn up admits that on the average he can only visit a factory once a year.

*Investigation should be made in all Cases by Certifying Surgeon.*

The investigation should be made by the certifying surgeon. He is on the spot, he can investigate without delay, and in those cases where further guarding is necessary he can inform the local inspector. The Secretary of State already possesses power under Section 20, Factory Act, 1901, to obtain this information from the certifying factory surgeon.

*Evidence of Injured Person.*

The certifying surgeon also visits the injured person and obtains from him information as to the state of machinery which is not always obtained at the factory, while his medical knowledge enables him to say what is the most probable cause of an accident in those cases where there are discrepancies between the evidence given by the occupier and the injured person. The report should be sent direct from the factory to the certifying surgeon, as at present. From factory to inspector and from inspector to surgeon causes unnecessary delay and increases the work of the already overworked inspector.

*Objections raised by Home Office.*

The objections which may be raised to this scheme are: (1) The trouble to the occupier of sending two notices; (2) that trivial accidents would be unnecessarily reported; (3) the cost of surgeons' fees; and (4) that surgeons' reports are of no use.

*Objections of Home Office Answered.*

1. No trouble has been experienced up to the present by the occupier having to send two notices. The number of accidents reported to the certifying surgeon from even a large factory seldom exceed 20 in the course of a year. We think this objection paltry.

2. We do not agree that accidents which cause only a slight injury should not be investigated. Our experience shows that investigation of these often reveals serious defects in machinery which are then remedied, thus preventing more serious accidents occurring in the future.

3. The total sum paid by Government to certifying surgeons for accident fees does not exceed £6000, a very small sum considering the amount of good which is obtained for it.

4. Times without number it is found on visiting factories that machinery is unguarded when not a hint of this occurs in reports sent by occupiers. This is then remedied. If more information is needed by the factory department from the certifying surgeon, especially as to the guarding of machinery, as I have stated, the Secretary of State already possesses the power to obtain it.

W. H. F. OXLEY,
Hon. Sec. Metropolitan Branch Association of
119, East India Dock-road. Certifying Factory Surgeons.

PS.—We think there are some good points in the Bill, such as the 14-day limit for Clause (*b*) accidents. We think that the Bill should be referred to the Standing Committee on Trade, when an amendment could be inserted, ensuring that all accidents coming under Clauses *a* and *c* should be investigated by the certifying factory surgeon.

HOSPITAL SATURDAY FUND.—The annual general meeting of the Metropolitan Hospital Saturday Fund Association was held on April 1st at the offices, Gray's Inn, Mr. W. V. Stratford presiding. The report of the council for 1904, which was adopted, showed that the receipts from the workshops and business houses had reached £24,344, the highest recorded in the history of the Fund, being an increase as compared with last year of £670.

# THE LANCET.

*LONDON: SATURDAY, APRIL 8, 1905.*


## The Expenses of Public Vaccination.

THE report of the departmental committee of the Local Government Board on the expenses of public vaccination has at last been laid before Parliament. The committee sat in the autumn of 1903, concluding its labours in December of that year, and the report is dated April, 1904. It must be inferred from this delay that the Government intends to remodel the Act this session instead of re-enacting the measure as it now stands on the Statute-book while carrying out the recommendations of the committee by Orders in Council. Whatever doubts may exist as to the delay which has taken place there can be none as to the thorough nature of the work of the committee. Its findings are in the main careful and judicial and no one who has followed the minutes of evidence with attention can avoid the conclusion that the members are in possession of the smallest necessary details of the subject. While the old Vaccination Acts were in force, under which public vaccination was performed at "stations" and at stated intervals, the total cost for England and Wales has fallen gradually from £112,942 in 1872 to £72,665 in 1899. This decrease in expenditure was due to the faulty administration of the Acts by local bodies. In districts where there was active hostility to vaccination no compulsion was enforced and in districts where there was no active objection administration had become lax. The country was for seven years awaiting the final report of the Royal Commission of 1889, which did not finally present its report until 1896 and the effect was felt. The new Act was passed in 1898 and its first year of working ended on Lady Day, 1900. The cost of vaccination rose at once to £237,527 and in 1902 it reached £270,628. This enormous increase alarmed the boards of guardians and one-half of their number memorialised the Local Government Board on the subject. It had been realised that the working of the new Act would be very expensive but in drawing comparisons between the total cost of the procedures under the old Acts and the new one certain accidental features had not occurred to the minds of even those most conversant with the subject. No one knew, except the experts of the Local Government Board and the public vaccinators, how lamentably the vaccination of the country had declined and no one foresaw the inevitable result of that decline—the small-pox outbreak of 1902–03, with the equally inevitable rush for revaccination on the part of a frightened populace. If we compare the cost in 1872 with that in 1902 and make proper estimates for the increase of population and for the cost of public revaccination, we shall find that the sum in the latter year is barely double that of the former; on the other hand, there is no question that the work, the time occupied, and the travelling expenses of the public vaccinator have all been increased fivefold by the changes in method introduced. Under the old system the "stations" were only opened on a limited number of days; an average number was three days each quarter, and (until compulsory vaccination was allowed to get into abeyance) the vaccinator was certain of some adequate returns, however distant his station might be. The travelling expenses were nominal; the time occupied was small, because 30 babies might be vaccinated in an hour if they were present. No clerical work beyond the entry of each case in the register and the filling in of the certificate was necessary. Matters are very different now; the actual operation of vaccination cannot be performed under 20 minutes; notice must be sent to the parent and the visit must be made by appointment within the hours of 9 A.M. and 4 P.M., however long the journey may be. The most trifling cause for refusal or postponement must be accepted and no extra payment is made or allowed for any extra journey.

Though it is true that a large number of boards of guardians did arrange fees with their vaccinators which afforded a poor average of remuneration for the enormous increase of work which was performed, the appendices to the report, when considered carefully, show how poor the pay has been. Half the boards of guardians in England and Wales have appealed to the Local Government Board for a reduction of the fees and yet the committee recommends the lowering of the *minimum* fees and trusts to the consideration of these very boards to offer a good average of stipend for the very careful and exacting work which is now demanded. The minimum fees paid under the Order of 1898 were 1*s.* for each child reported by the vaccination officer as unvaccinated by the time he or she attained four months of age and 5*s.* for each successful vaccination at the child's house or for each revaccination at the patient's own house. Many boards of guardians paid larger fees than these, granting 2*s.* for each unvaccinated child (technically known as fee (*a*)) and sums in excess of the minimum which were supposed to cover the large amount of unremunerative work. Under the committee's recommendations a system of "zone" minimum fees is to be established; thus fee (*a*) remains the same, while for successful vaccination within one mile of the vaccinator's house only 3*s.* can be claimed, 4*s.* for cases between one and two miles, and 5*s.* for over two miles. For work effected beyond three miles the vaccinators and their boards will have to make special terms. The fees for revaccination at the vaccinator's house will remain at the rate of 2*s.* 6*d.* The committee is careful to point out that it does not consider these figures as affording a sufficient remuneration in every case, and in districts where the population is scattered or where there is local opposition to the practice of vaccination consideration of these conditions should be, in its opinion, taken. In such districts it feels assured that boards of guardians will in the future be willing to pay higher fees than the minimum required by statute. It is difficult to feel the same ready confidence that all boards of guardians will display this liberality. The committee itself emphasises the fact that the boards and the public are imperfectly acquainted with the duties which

the public vaccinators are now called upon to perform, and there is little likelihood that the mere issue of this report will tend greatly to leaven the large mass of this ignorance, while the fact that the minimum fees have been lowered by the recommendations will be readily grasped and as readily acted on. No question exists in the minds of the public health department of the Local Government Board and of the committee of inquiry that the standard of vaccination has risen under the present working to a highly efficient level. The proportion of infantile vaccination has reached a point promising real safety to the country, the "insertional results," with their increased protective value, have been greatly enhanced when compared with those of the "arm-to-arm" operation, while the confidence in the quality of the lymph and in the methods of the operation induced in the public mind has admittedly been a factor which has assisted to swell the expenses. The evidence of one witness was accepted in a curiously phrased paragraph by the committee as to the effect of this confidence. For since the passing of the Act of 1898 an increasing number of persons of superior position and means who formerly would have called in their private medical attendants have availed themselves of the services of the public vaccinator. The varied reasons for this change in opinion are carefully brought out in Mr. MAUDE'S evidence [1] and are summarised in the report, which does not, as it should, condemn this abuse of public vaccination.

Thus while the report acknowledges the excellence of the work done and the great labour involved in its performance, the profound knowledge of the question of vaccination, clearly possessed by the authorities in Whitehall, must lead them to appreciate the difference between first-rate and inferior work on the part of their vaccinators. It was admitted on all hands that the work effected under the old Acts was not always first class; it may be asked, does any business-like community expect first-class work from men whose remuneration is cut down to the lowest point? A better standard of work exacted and a better standard of pay provided promptly produced a higher class of result. The work and the pay stand in the position of the premisses to a syllogism and every logician knows the effect on the result if either premiss is disturbed. It is therefore with regret that we discover that the only real practical outcome of the committee's labours is a recommendation of the reduction of the vaccinators' fees. The reduction of fees proposed is based on the assumption that the urban vaccinators have been over-paid when receiving the minimum fee of 5*s*., while the committee recognises the hardship inflicted on many rural officials who have had to travel enormous distances for exiguous fees per journey. How small these fees were under the old rates of pay is abundantly illustrated by some of the tables prepared by witnesses. One union is found paying an average of 6*d*. per mile for the work done, there being an average mileage per case vaccinated of 12 miles, and the minimum fee of 5*s*. for successful cases. When we remember that this work has to be done by previous appointment the insufficiency of the remuneration is obvious. The committee states (§ 83) its opinion that having regard to the work done the remuneration of public vaccinators since the Act of 1898 came into force has in many cases not been excessive, particularly in country districts. At the same time it considers that the fees may be reduced without hardship if the provisions of the Order are made more elastic, but the changes in the direction of elasticity appear very slight, in fact to consist in the proviso that if vaccination is refused or deferred for any reason except that of the certified ill-health of the child the vaccinator need pay no further visit, as he has to do at present, but the child must be taken to the vaccinator's house. The relief in other directions of work is purely nominal and is in no degree likely to make up for the curtailed emoluments. The suggested change that public vaccinators should have the same fixity of tenure of office as other Poor-law officers have will be welcomed by those officials whose association has long striven for this security. The law by which a public vaccinator's contract may be terminated at 28 days' notice by his board of guardians has been a grave injustice, as it has frequently been employed by boards to cut down the fees to the legal minimum by the threat of immediate dismissal if the terms are not accepted. The proposals of this report will not be received with any satisfaction by the urban vaccinators and many of the rural officers will have a hard fight to secure an adequate return for their important labours. We trust that the Local Government Board will accord to them proper support when the time comes. Since the advisers of that Board obviously rate good vaccination at its proper value it is to be regretted that the committee has not had the courage at this appropriate juncture to recommend that the payment for this work should be debited to other accounts than those of small boards of guardians whose purview in many matters (and especially in that of vaccination) is frequently narrow and prejudiced.

[1] Minutes of Evidence, p. 61, Q. 1514 et seq.

## The Teaching of Hygiene and Temperance in Elementary Schools.

AN important conference of medical practitioners was held at the Examination Hall, Victoria Embankment, on March 24th, Sir WILLIAM H. BROADBENT being in the chair, to discuss the question of promoting the teaching of hygiene and temperance in elementary schools.[1] The chairman, in his opening speech, pointed out that there could be no doubt of the necessity of such instruction and that therefore the training of teachers and the provision of suitable books were the first considerations. Lord LONDONDERRY, President of the Board of Education, in receiving a largely attended deputation of medical men pointing out the importance of this matter, while expressing sympathy with its objects declared that the teachers in elementary schools were not as yet qualified to give instruction in hygiene. Sir VICTOR HORSLEY stated at the meeting that the petition from which the movement originated (which was signed by nearly 15,000 medical practitioners) had been circulated widely and had received very favourable consideration from a large number of educational authorities in different parts of the country, but in the meantime the Board of Education

[1] See THE LANCET, April 1st, p. 881.

had published a memorandum by Sir MICHAEL FOSTER criticising adversely certain syllabuses in use among teachers for their guidance in the instruction of children in these subjects. According to Sir VICTOR HORSLEY these criticisms were so misleading that a protest had been drawn up and forwarded to the Board of Education. In conclusion Sir VICTOR HORSLEY stated that "the object of the present medical movement was to secure that the subjects of bodily health and vigour and of healthy homes should receive as much attention at least as geography and history." With these objects and with the adequate instruction of both teachers and pupils in the fundamental principles of hygiene, both personal and domestic, we are in complete and absolute sympathy, as the results can only be beneficial, but the two documents referred to, the memorandum of Sir MICHAEL FOSTER and the protest signed by a number of well-known medical practitioners, are both of a nature to require comment.

At the outset it may be admitted that Sir MICHAEL FOSTER'S memorandum is a misleading and unfortunate document—misleading in virtue of its incompleteness and somewhat unnecessary technicality and unfortunate in its liability to misconstruction. The memorandum as published by the Board of Education with extracts from "certain" syllabuses employed in the teaching of hygiene and temperance is incomplete, since the syllabuses themselves are not included and no reference is given to enable them to be identified, whilst the attempt to define in scientific language certain terms which have a more or less indefinite significance as used popularly, such as "nourishing" and "intoxicating," is far from satisfactory. On the other hand, although we are in the main in accord with the letter of protest addressed to Lord LONDONDERRY, it is, perhaps, a little unnecessarily severe in its castigation of Sir MICHAEL FOSTER'S memorandum. The obvious intention of Sir MICHAEL FOSTER is to protest against the too sweeping assertions sometimes made in relation to the actions of alcohol and to the dogmatic application of the teachings of physiology to everyday problems without careful consideration of all the factors concerned. To give an example, the following paragraph is quoted from one of the syllabuses: "A poison is something antagonistic to life. Food supports life; poison destroys life. Alcohol is defined as a poison because it acts in a contrary way to food." So slipshod and inaccurate a definition merits the criticism which it receives from Sir MICHAEL FOSTER who states: "If we take into consideration *all* variations in the conditions of the body and not those of 'health' alone it may safely be stated that there is no substance which in a certain dose may not, under certain conditions, be taken into the body with beneficial effects. The qualities leading a substance to be called a poison are relative, not absolute." Unfortunately, Sir MICHAEL FOSTER, in order to illustrate the truth of this important proposition, points out that substances like oxygen and water, which are admittedly essentials of life, may under certain artificial conditions become injurious, without sufficient explanation of the artificiality of those conditions, with the result that misconception is very liable to occur, as is shown by the remarkably ingenuous note of the Board on this matter to the effect that no reference is made (in the syllabuses) to "any dangerous properties of oxygen." Again, Sir MICHAEL FOSTER quite rightly objects to statements such as the following extracted from the syllabuses: "We need not then be afraid to speak of alcohol by its proper designation as a poison. In small quantities it does not kill, but the same thing may be said of strychnine, arsenic, and other poisons. We may sum it up thus: in considerable quantities alcohol will kill, in smaller doses it does injury corresponding to the amount taken"; and again, "Alcohol within the body is always our foe and never our friend." The inconsequence of such statements when examined critically is obvious, but Sir MICHAEL FOSTER again invites misconstruction by pointing to the injurious effects of distilled water on tissues and stating that the argument used in the syllabuses might with equal justice be employed in favour of total abstinence from distilled water, a statement which is apt to suggest that the injurious effects of alcohol and distilled water are of like character and degree. There can be little doubt that in the end both Sir MICHAEL FOSTER and his critics have practically the same objects at heart since Sir MICHAEL FOSTER in his memorandum writes: "There ought to be no difficulty in teaching even young children hygienic duties in a broad way, basing the teaching on the results of common experience, using physiological science, and then only simple and general physiological truths, as illustrating those results and showing the sound basis on which the teaching rests. But to teach hygiene as is proposed in the syllabuses submitted, in the form of deductions from special physiological observations often of a doubtful character, can only be productive of harm."

It is earnestly to be hoped that one outcome of the matter may be a comprehensive discussion of the aims and the scope of the teaching of hygiene in elementary schools and the publication of an authoritative and explicit syllabus of such instruction by a committee of hygienists, physiologists, and educationists, if possible under the auspices of the Board of Education. A proper syllabus of this kind dealing with the subject in a broad way and not confined to the uses and abuses of alcohol but including reference to the injurious effects of other substances in excess, including tea, is, as stated by Sir LAUDER BRUNTON, one of the signatories of the protest, in a footnote appended to it, a pressing need at the present time.

## King Edward's Hospital Fund for London.

THE proceedings of the annual meeting of the General Council of KING EDWARD'S Hospital Fund for London, of which we gave a full report last week, are in many respects calculated to exert an abiding influence alike upon the hospital administration and upon the medical education of the metropolis. It has long been evident to all interested in the question that the complete independence of the London hospitals and the active competition for support in which they are frequently engaged are not conducive either to efficiency or to economy, and the founders of the Metropolitan Hospital Sunday Fund early entertained a hope that its influence might be

useful in promoting a harmonious adjustment of the claims of contending charities and in diminishing rivalries which were by no means certain to issue in the survival of the fittest. It soon became manifest, however, that neither the Sunday Fund nor the Saturday Fund was so organised as to exert any considerable authority over hospital management or to deal with its difficulties in any effective manner; and hence, excepting in a very few instances, the functions of the distribution committees became arithmetical rather than judicial. The establishment of KING EDWARD'S Fund was the signal for a new departure in this respect; not only because its committees were so constituted as to command an increased degree of public confidence, but also because their investigations into questions of claims and merits were more effective than any which had previously been attempted. A society actively supported by Royal patronage, wielding the power of the purse to a large and constantly increasing extent, and commanding the services of many persons eminent in the clerical, legal, and medical professions, was a body qualified to form conclusions which could not be disregarded with impunity. A hospital on which such a body bestowed damaging criticism was hardly likely to succeed in an appeal from that criticism either to the general public, or to the more restricted number of its previous supporters, and opinion was gradually taught to look for, and to acquiesce in, the decisions of the Fund, and to recognise that hospital administration is a matter demanding the knowledge of experts and capable of being tested by rules which they are able to apply. The hands of the administrators of the older funds were materially strengthened by the trust which the public soon learned to repose in the new one; hence we have just seen that a diminution of the grant from the Sunday Fund to the National Hospital for the Paralysed and Epileptic on the score of undue expenditure upon in-patients, instead of producing the indignant protests which it would probably have called forth only a few years ago, was speedily followed by careful and painstaking inquiry upon the part of the committee and by reforms which, without any impairment of efficiency, effected a saving of £2000 within a year. Hospital boards and officials have been compelled to recognise their responsibility, not only to their subscribers but to the public, for the proper and judicious expenditure of the large sums annually committed to their stewardship and to see that good intentions furnish no defence against well-founded charges of undue costliness of management or of undue carelessness in administration.

The most important question raised in the report of KING EDWARD'S Fund for the past year, and one which was dwelt upon by the PRINCE OF WALES in his speech from the chair, had reference to the propriety of the assistance hitherto given by many hospitals to the medical schools connected with them. The question, as our readers will remember, was originally raised by the antivivisection society or societies which, like a well-known scriptural character, spoke "not because they cared for the poor" but under the influence of widely different motives; and it is probable that the first and not unnatural effect of their agitation was to arouse a feeling of opposition on the part of many of the genuine friends of hospitals and a determination to support the school subsidies against their assailants. Lord STANLEY, as treasurer of the London Hospital, has informed the public that his committee tested the feeling of its supporters by inviting them to earmark their contributions as applicable, at the discretion of the committee, either to the patients or to the school and that the contributions thus earmarked within a week amounted to twice as much as the largest sum ever given by the hospital to the school within a year. But the question was too important to be disposed of in this summary manner and the governing body of KING EDWARD'S Fund appointed a special committee to inquire into, and to report upon, it, a committee consisting of Sir EDWARD FRY, the Bishop of STEPNEY, and Lord WELBY, to which Mr. DANVERS POWER, the chairman of the committee of the National Hospital for the Paralysed and Epileptic, consented to act as honorary secretary. The report of this committee set forth that of the 12 hospitals which have medical schools at least eight had contributed from their funds to the cost of medical education, and proceeded to declare that the committee "do not find that any special considerations have been advanced in justification of the expenditure by the hospitals on the schools." Whatever differences of opinion may exist with regard to the soundness of this conclusion, it is at least certain that the governing body of the KING'S Fund intends to act upon it, and that the payment of subsidies to the schools, apart altogether from the grounds urged by the first opponents of the practice, will for the future be systematically discouraged by the Fund. The expressions used by the PRINCE OF WALES, although extremely moderate, were none the less decided. He said that, in consequence of the date of the report, the hospitals could not act upon it during the present year in such a way as to clear their accounts of the school charges and that he hoped that the authorities of the Fund would be regarded as acting reasonably if they deferred dealing with the question until the year 1906 and thus gave the hospitals nine months in which to consider their position. After the lapse of that time it would be required of them that the whole of the grants from the KING'S Fund should be applied to the relief of the poor, so that the contributors to that Fund might have complete assurance that their money was employed in no other manner. It may be presumed, we suppose, that the Fund would not raise any objection to the exercise of such a discretion as that which Lord STANLEY'S committee has asked for and obtained from a certain section of its supporters.

But the aspect under which the PRINCE OF WALES'S declaration will be chiefly interesting to the medical profession, and one upon which His Royal Highness himself laid stress, is that of the probable effect of the change upon medical education. The PRINCE OF WALES displayed complete acquaintance with the results of conducting that education, or at least the preliminary portions of it, in a number of small and insufficiently equipped schools, and he spoke hopefully of the benefits which might be expected to arise from the transference of the preliminary and intermediate subjects to an institution specially organised for the purpose and as far as possible of a university character. He expressed his pleasure in the knowledge that the Senate of the University of London had already put forward a scheme

for the establishment of an Institute of Medical Sciences in connexion with the University, and he appealed to the public to supply the funds necessary for this purpose, making especial reference to the recent generous donation from Mr. BEIT. It is well known that members of the Royal Family do not speak in public upon technical subjects save after consultation with competent advisers and we may therefore conclude that His Royal Highness's expectations of improved medical education are shared by many members of the profession, as they are by ourselves. There will, no doubt, be a period of transition, during which the old order will be weakened, while the new will not yet be in a position to meet all the demands likely to be made upon it, but difficulties of this kind are inseparable from change and must not be suffered to diminish our perception of the benefits which the change will ultimately secure.

# Annotations.

"Ne quid nimis."

## THE PURITY OF WATERCRESS AND WATERCRESS BEDS.

SUSPICION has more than once been entertained that watercress has given rise to an outbreak of enteric fever and there is little doubt that watercress is not infrequently cultivated in an environment which is liable to specific pollution. It would appear from a report recently issued by the London County Council and drawn up by the medical officer of the Council, Sir Shirley Murphy, that watercress may well be the carrier of disease, since at any rate not all the known beds situated within some 50 miles of the county of London and supplying the London market exist under conditions of strict sanitary requirement. So far, however, the evidence that watercress can be a source of danger because it acts as a carrier of sewage-contaminated water has not been thoroughly conclusive. It is at any rate obviously desirable that watercress should not be allowed to be cultivated in water which is grossly polluted or which shows a worse degree of impurity than does an ordinary drinking water-supply. As a result of a topographical inquiry made over the area just mentioned by the county council inspectors the best beds were found, generally speaking, upon a bottom of hard clean gravel. Such beds are regularly cleansed and in some instances are occasionally treated with lime in order to destroy organisms deemed to be injurious to the watercress. On the other hand, there were beds found in sluggish streams or backwaters having muddy bottoms and receiving the drainage of grazing lands. The water-supply was found to be derived from various sources, such as rivers, canals, natural springs, and artesian wells. The causes of pollution were found to be many and various. Surface drainage from grazing lands is often allowed to enter the beds and in some instances house drainage and the drainage from trade premises are permitted to aggravate the mischief caused by want of proper cleansing and the unchecked growth of rank vegetation. Dr. Frank Clowes, chemist to the Council, examined 129 samples of water from watercress beds and his examination led him to classify the results into four groups. In the first group, including 53 samples, the purity of the water as regards nitrogenous organic matter was about the same as that of Thames-derived filtered water. 47 samples in the second group were found to contain the same nitrogenous equivalent as the water of the Thames above the water companies' intakes. The third group included 22 samples in which the nitrogenous organic matter was excessive and the fourth group included certain samples in which the nitrogenous organic matter was very excessive. In the third and fourth groups, in fact, there can be little doubt that the samples were polluted with sewage. The bacteriological inquiry carried out by Dr. A. C. Houston confirmed the evidence yielded by topographical investigation. The best waters contained no "coli-like" microbes of any sort, and the least satisfactory waters contained from 1000 to 10,000 "coli-like" microbes per cubic centimetre and yielded positive results with the bacillus enteritidis sporogenes test. On the basis of the bacillus coli test the best waters were from 1 to 10 million times purer than the least satisfactory waters. Generally speaking, Dr. Houston finds that watercress reflects bacteriologically its aqueous environment—that is, the more polluted the water the less pure is the watercress and the purer the water the cleaner is likely to be the watercress. The importance of thoroughly washing the watercress is shown by the fact that the final as compared with the first washing of impure watercress was usually found to contain a much smaller proportion of objectionable microbes. The results seem to indicate, however, that no ordinary amount of washing could be relied on to remove from watercress grown in polluted waters all undesirable microbes. This may be due either to bacteria so firmly adhering to the exterior of the plant as to resist being swept away during the washing process or to the watercress harbouring microbes within its structure or to a combination of these causes. In regard to standards applicable to the water "feeding" watercress beds Dr. Houston thinks that the imposition of drinking water standards would press rather heavily on the watercress industry. He suggests a broad classification in regard to bacteriological purity on the lines already tentatively brought forward in his reports to the Local Government Board and to the Royal Commission on Sewage Disposal. It is evident that some control in this matter is called for, since the consumption of watercress amounts in London to as much as 1500 tons per annum. Nor is its consumption confined to the poorer classes who use it as a pleasant adjunct to bread and butter, for it is frequently used as a salad with game and poultry.

## "A NEW FOOD FOR USE IN TYPHOID AND OTHER FEVERS."

WE have received a copy of a pamphlet bearing the above title, written by Dr. J. W. Springthorpe, physician to the Melbourne Hospital, and reprinted from the *Australasian Medical Journal*, in which the writer draws attention to the disadvantages which he considers that milk possesses as a food. He is of opinion that it but imperfectly fulfils the requirements of a food during fever. Professor Voit has shown that three and a half pints of milk of good quality (from 8 to 10 per cent. of cream), though satisfying a healthy idle adult, are deficient in the albumin required, and while containing twice the fat are wanting in carbohydrates to the extent of two-thirds of that contained in an ideal diet. A diet for use in cases of fever should contain more carbohydrates and less albumin than an ordinary diet and should be free from fat; therefore Dr. Springthorpe argues that even with the addition of some form of animal broth the quantity of milk recommended by physicians must fail to meet the requirements of a patient suffering from continued fever. Further, he maintains that though a fluid food in the mouth, milk becomes a more or less solid food in the stomach—the undigested curd represents so much less of albumin, whilst the curds themselves are a frequent cause of rise of temperature, restlessness, diarrhœa, and "other aggravations of an already serious if not dangerous condition." He admits, however, that curdling may be diminished by appropriate dilution and admixture Milk, too, s stated to be a food very likely

to ferment; hence distension and all the discomforts and dangers which follow therefrom. After enumerating other disadvantages which he alleges that milk possesses as a food in cases of fever he proceeds to suggest a substitute. He draws attention to the fact that whilst testing the suitability of various food-stuffs for the growth of Eberth's bacillus M. de Bavay discovered that a sterilised hopped malt extract was superior to either broth or milk in its resisting power, there being absolutely no growth whatever when typhoid bacilli were introduced into it. Analysis showed that it consisted of soluble carbohydrates, peptones, parapeptones, and amides, a small proportion of ash, rich in phosphoric and lactic acid, and the extract of hops. The malt extract was tested practically during an epidemic of typhoid fever and Dr. Springthorpe came to the following conclusions: 1. That sterilised hopped malt extract may be given as a food in place of milk in the treatment of typhoid fever. 2. That the extract has many advantages over milk. Thus, its composition may be made definite; it is easy to keep and to administer; there is no risk of its becoming sour; there is no need of peptonising or of adding alkalies or effervescents; and it can be taken with acids. 3. That "in many ways it meets the requirements of the case better than milk." Thus, the active principles are pre-digested, the carbohydrates predominate, and fat is absent. 4. It exerts upon the disease a beneficial influence which is not found in the case of milk. In an appendix to this communication directions are given for the preparation of the extract. The results obtained by Dr. Springthorpe are certainly interesting and the preparation merits further trial.

## INCOMPATIBILITY IN THEORY AND PRACTICE.

IN an interesting paper (published in the *Pharmaceutical Journal* of Feb. 18th) Mr. J. P. Gilmore has communicated his views on incompatibles. The various cases of incompatibility are grouped by the author under their main headings, due severally to the production of an insoluble substance, to theoretical chemical disagreement without detriment to therapeutic effect, and to the formation of products the medicinal properties of which are dissimilar to those presumably required by the prescriber. It will at once be conceded that the last case alone, as cited by Mr. Gilmore, deserves serious consideration. Many drugs act best in the solid form as, for instance, the salts of bismuth, while the acid in the gastric juice frequently dissolves many insoluble compounds. There are a few cases in which absolute danger results from this class of incompatibles—e.g., where strychnine is totally precipitated from an alkaline solution, on standing, there is a great chance of the patient taking the greater part of the alkaloid in the last dose. Again, chemical disagreement has in certain cases been shown by long usage to be either an advantage or without deleterious effect. Thus prescribers daily gain satisfactory results from combinations of lead and opium, ergot and iron, digitalis and iron preparations, and ferrous iodide and mercuric chloride. In such cases there is generally no necessity for the dispenser to trouble the prescriber. Indeed, many cases of incompatibility are so designed by the prescriber. An instance illustrating this point has been recorded of a laryngeal paint containing cocaine hydrochloride, sodium bicarbonate, mucilage of acacia, and water. Advantage is here taken of the fact that the anæsthetic action of cocaine on the mucous membrane is more energetic in the presence of sodium bicarbonate. But when chemical incompatibility leads to the formation of products of different therapeutic value—e.g., a combination of strychnine and chloral hydrate to which Mr. Gilmore refers in his paper—the case assumes an importance that cannot be over-estimated. The difficulty is increased from two causes, the unfamiliarity of many prescribers with the interactions of various drugs and the general lack of therapeutic knowledge among dispensers. Hence the dispenser, unless he has had long experience, is often at a loss to know whether certain combinations are harmful or not. In such cases he should not hesitate to consult the prescriber. Two instances of incompatible combinations evidently due to error are given by Mr. Gilmore: the first a diarrhœa mixture containing diluted sulphuric acid with chalk mixture; and the second a lotion containing cocaine hydrochloride and sodium bicarbonate in water, the directions being to filter through paper. In the latter case the operation of filtering would naturally remove the cocaine from solution. The subject of incompatibility is difficult to deal with, not so much from the frequency with which usually harmless incompatible substances are prescribed together but from the risk that either in ignorance of the harmfulness of a particular combination or with a desire on the part of the pharmacist not to trouble the prescriber unnecessarily fatal results may occasionally follow from the dispensing of an incompatible prescription as written. The wide use of the newer synthetic remedies undoubtedly increases the risk, though it will be materially reduced as their various actions become better known. It would seem desirable that in the future the scope of pharmacy and materia medica might be widened in the preliminary medical examinations, while dispensers should be encouraged to understand more of the physiological and therapeutic action of the remedies which they compound. In the meantime a mutual confidence between prescriber and dispenser cannot but be of benefit to the patient when unlooked-for difficulties arise.

## GONORRHŒAL POLYARTHRITIS IN THE PUERPERIUM.

IT is not sufficiently recognised that the puerperium may waken into activity a pre-existing gonorrhœal infection and give rise to a condition which may be mistaken for puerperal fever. At the meeting of the Société Médicale des Hôpitaux of Paris on Dec. 23rd, 1904, M. Mosny and M. Beaufumé reported the following case. A married woman, aged 28 years, was delivered normally of her first child on Jan. 24th, 1904. On the fourth day of the puerperium the temperature rose to 104° F., which was attributed to influenza. On the fifth day the temperature was again normal but on the sixth it rose again to 100·8°. During the rest of the time she was in hospital it remained normal. There were no other symptoms. She left hospital against advice on Feb. 2nd. On the 5th she had slight pains in the left shoulder and elbow and perspired abundantly at night. On the following day the left knee was affected and then the left wrist. She was readmitted on the 10th. When examined on the 11th she complained of pains in the joints. The right elbow and wrist-joints and the metatarso-phalangeal joint of the right great toe were swollen, red, and painful. The left knee was very swollen; it was not the seat of much spontaneous pain but movements were so painful as to be impossible. Vaginal examination showed only a slight laceration of the cervix and a little leucorrhœa. Salicylate of methyl was applied to the joints and one and a half grammes of quinine were given daily. On the following day the swelling of most of the joints had subsided but the left knee was still more swollen. On the 18th it was aspirated and yielded 40 cubic centimetres of greenish sero-purulent fluid containing ordinary polynuclear cells. Microscopic examination did not show either streptococci or gonococci. Cultures on gelose and bouillon were negative but some gonococci were found in the pus which was deposited at the bottom of the tube of bouillon. Cultures on serum and on blood and gelose yielded the gonococcus in pure culture. The gonococcus could not be found in the vaginal mucus or in the urethra. For a long time before marriage the patient had suffered

from abundant leucorrhœa after menstruation. For a year the discharge had been thick and yellowish and stained her linen. On the 18th the left knee was enveloped in cotton wool, tightly bandaged, and placed in a splint. Salicylate of sodium was given in daily doses of eight grammes and the dose was gradually diminished. This treatment was not efficacious and therefore on March 9th salophen in doses of five grammes daily was substituted for the salicylate. At this time the muscles of the left lower limb were much atrophied. The salophen also failed. All medication was stopped on the 25th and only the immobilisation and compression of the knee were maintained. On April 5th the temperature became normal but the knee remained tender. On the 23rd treatment by immobilisation and compression was changed to massage and passive movements. The atrophy was so great that the circumferences of the thigh and the leg were two centimetres less than on the other side; on the other hand, the circumference of the knee was from two to three centimetres greater. Improvement took place and on May 14th movements of the knee could be performed without pain. On the 27th the patient was discharged able to walk but the muscular atrophy was undiminished. The important point in the case is the complete latency of the gonorrhœal infection until it was stimulated into activity by the puerperium. It is also noteworthy that the history did not disclose the existence of gonorrhœa and no signs of it were found at the pelvic examination. Moreover, the child did not suffer from ophthalmia. The gonococcic arthritis, therefore, simulated the usual form of puerperal arthritis, the streptococcic. When the arthritis took a mono-articular phase confusion with puerperal arthritis was no longer possible. The case shows the necessity of careful bacteriological examination in the diagnosis of gonorrhœal arthritis.

## THE MORALITY OF THE DUTIES ON SPIRITS.

ON Monday next the Chancellor of the Exchequer will present the Budget in the House of Commons and it is generally known that the financial statement in regard to the year's revenue is satisfactory and that there will be a balance of some millions to the good. An interesting feature of the year's revenue, we learn, is that despite this surplus the income derived from the taxation of alcoholic liquors has very appreciably declined. This, of course, means a diminished consumption of wines and spirits which may be traced, perhaps, to a moral improvement in the nation's temper or, as is more probable, to a reduced spending capacity of the individual brought about by commercial depression. Personally, we should welcome a falling off in the revenue from alcoholic liquors if such a circumstance only helped to remove the reproach, as the forthcoming Budget appears to do, that our finances are largely supported by the nation's indulgence in alcohol. The argument, moreover, that because wines and spirits are an important source of revenue it would be inconvenient from a purely fiscal point of view to interfere with the activity and the custom of the trade would receive a healthy set-back. It is notorious that when Chancellors of the Exchequer have had their attention drawn to the desirability of the Government exercising control over the purity and the quality of excisable liquors they have evaded the question, fearful lest any action should interfere with a substantial source of revenue. The Government or its officials only care to collect the tax regardless entirely of the quality or the wholesomeness of the spirituous drink upon which that tax is imposed. There is thus no discrimination made between the genuinely described and the falsely described. In a word, all spirits are merely alcohol from the fiscal point of view and all question as to the materials from which the spirit has been made is completely ignored—that is to say, the tax is the same whether the foundation of the spirit has been malt, grapes, corn, molasses, sugar, potatoes, or, in fact, anything from which alcohol can be made, and the category may include a list of very undesirable materials. Surely this uncompromising method of taxation is a grave injustice to the consumer who, after all, bears the tax. Is it logical, is it just, to impose upon the consumer the same amount of tax on the genuine article as upon that which is incorrectly described? The principle that the consumer should be completely in the dark as to the genuineness of the article upon which he pays a heavy tax is surely unsound. It is all very well from the tax-gatherer's point of view but morally it is wrong. The consumer is entitled to get genuine tea, coffee, or cocoa when he asks for them and he expects to participate in the tax in accordance with the adjustment of the customs tariff, but he naturally would resent having to bear the same rate of imposition on mixtures of tea, coffee, or cocoa. There is a duty on cocoa of 2*d.* per pound which, of course, the consumer indirectly pays, but there is no duty on starch. When, however, a mixture of cocoa and starch is sold to him as cocoa he is cheated and he has a remedy in the Sale of Food and Drugs Act. He is similarly cheated when on demanding a grape spirit (i.e., brandy) or a malt spirit (i.e., whisky) he is supplied with grain spirit or patent spirit which is obviously not of the nature, quality, or substance of the article demanded. Yet whatever spirit he may happen to be supplied with he pays the same duty and the reply of the Government is laconic enough, "It is all alcohol." Such an answer may satisfy fiscal needs but it is distinctly detrimental to the welfare and the health of the community. It is, in fact, time that the public received some consideration and protection in this matter and it is anomalous that a system of taxation should exist which deals with the genuine article on the same terms and level as it does with an article which is practically falsely described. It amounts to deriving revenue from a species of fraud.

## THE INSTRUCTION OF THE YOUNG WITH REGARD TO VENEREAL DISEASE.

WE have before us a series of five lectures[1] delivered to the students of the University of Copenhagen by Professor Erik Pontoppidan with a view to instruct a general audience of young men, not necessarily intended for the medical profession, as to the significance and the prevention of venereal disease. These lectures were first given under the auspices of the International Conference "Pour la Prophylaxie Sanitaire et Morale" held at Brussels in 1899 and they have since been repeated in the autumns of 1900, 1901, and 1902, no doubt with the object of attracting the attention of junior students at the beginning of the academic year. The lecturer has aimed at imparting to his audience a measure of scientific knowledge of the hygienic aspect of venereal infection corresponding to the instruction sought to be made general with regard to tuberculosis during recent years. He explains at some length the nature and the causes of venereal disorders and the outlines of the treatment necessary to eradicate them from the infected person, dwelling upon the consequences to the individual of the neglect of adequate measures and upon the results to the community of the unchecked dissemination of the evil. This neglect, he points out, is due to ignorance and in a great measure also to other causes such as the desire for secrecy and he urges fuller knowledge accompanied by more open recognition of the danger together with prevention

[1] What Venereal Diseases Mean and How to Prevent Them. By Professor Erik Pontoppidan, M.D., chief physician to the Western (Lock) Hospital, Copenhagen. Translated by W. Jessen. London: John Bale, Sons, and Danielsson, Limited. 1905. Pp. 79. Price 2*s.* net.

not only by medical and sanitary precautions but also by the setting up of pure and healthy ideals of life. The subject is one of great importance and the question as to how far it can be broached publicly and discussed with a view to the amelioration of existing conditions is in itself one upon which diverse opinions are held. Of the prevailing ignorance none can doubt. In the more intelligent class from which Professor Pontoppidan's hearers were drawn it leads to medical aid being sought either not at all or too late and to a want of perseverance which is equally undesirable. With regard to the ignorance of the less educated classes we note that the lecturer refers to the existence in Denmark of a hideous superstition, with which medical men and lawyers practising in criminal courts are familiar in this country, that sexual intercourse with a virgin, or the passing on of infection to a child, will cure venereal disease. When such ideas as this require to be stamped out it can hardly be denied that more extended knowledge is desirable; and when the desirability of discussing such topics with the young is disputed it must be borne in mind that this, as a rule, amounts to the substitution of sound and accurate knowledge imparted by one in the position of a teacher for such information as his hearers would otherwise gather from untrustworthy and tainted sources and would disseminate in unhealthy conversation among themselves. With reference to the lives led by young men in universities Professor Pontoppidan refers with approval to the influence of athleticism in the discouragement of sexual indulgence and pays a high, and let us hope deserved, compliment to English universities and to the attitude towards licentious talking and living which he finds prevailing in them. The conditions existing in the British army, on the other hand, fill him with surprise and horror which he does not disguise and he would no doubt point to the rank and file of our battalions as a suitable field for the development of knowledge as a prophylactic. His lectures, however, are for a different class and we would recommend their perusal and the consideration of the course suggested in them by teachers of those who when instructed are most likely to be able to influence others, if not by precept at least by their example.

## AN INTERNATIONAL MEDICAL ASSOCIATION AGAINST WAR.

ON March 21st there assembled at the house of Dr. Rivière, in Paris, more than 200 medical men. The object of the meeting was the association of medical men for the purpose of doing all in their power to do away with war. It was decided to found an International Medical Association against War and it was proposed to hold a congress on the subject in two years' time. Those present were constituted the committee of the movement and officers were elected as follows. President: Dr. Rivière. Vice-Presidents: Dr. Philippeau, Dr. Suarez de Mendoza, and Dr. Th. Mende Ernst. General Secretary: Dr. Mazery. Secretaries: Dr. Pokinotoff, Dr. Antonelli, Dr. Cree, Dr. de Torres Mendiola, Dr. de Castro Soffia, and Dr. Cogrel. Treasurer: Dr. Marechal. Delegated secretaries: Dr. Mazery, Dr. Cree, and Dr. Cogrel. Dr. Rivière, who opened the proceedings in an able discourse, reminded his hearers of the horrors of war; he pointed out how the North Sea incident showed very well what arbitration could do and argued that medical men who were so intimately acquainted with human misery, both physical and moral, were by that very fact the most fitted of the community to collaborate in the great work of substituting arbitration for war. Dr. Rivière has set up a high ideal but there is no one who will not earnestly hope that this ideal may be realised in the near future. Even though war, as it undoubtedly does do, calls forth the finest qualities of human nature, the hideously effective action of modern methods of destruction sickens the heart. And its effects are not limited to the battlefield. As our great master of English prose said (he is speaking of the distress and anxiety with which the casualty lists from Flanders were studied in this country after Waterloo): "If such an interest could be felt in our country and about a battle where but twenty thousand of our people were engaged, think of the condition of Europe for 20 years before, where people were fighting, not by thousands, but by millions; each one of whom as he struck his enemy wounded horribly some other innocent heart far away."

## DANGERS TO THE OPERATOR FROM THE X RAYS.

THOUGH the injuries inflicted on the patient in the use of the x rays have been repeatedly recorded little attention has been directed to the dangers to the operator. However, some alarmist reports come from America and if at present the evidence is not sufficient to accept them absolutely at least a good case is made out for greater care in using the rays. According to a recent editorial article in the *Medical News* of New York Dr. Tilden Brown has demonstrated absence of spermatozoa (azoospermia) in the semen of a number of patients and physicians who had spent more or less time exposed to the x rays. They, however, were not conscious of any loss of potency. These observations are supported by certain experiments made in Germany. About 18 months ago Albers-Schönberg found that if the abdominal surface of male guinea-pigs or rabbits was exposed for a prolonged time to the x rays the animals became sterile but their potency was unimpaired. This sterility was due to the development of azoospermia, which was shown by Seldin to depend on the disappearance of the epithelium of the seminiferous tubes. Recently Hulberstaedter has described experiments which show that the ovary is even more susceptible to the action of the rays than is the testis. In the *Boston Medical and Surgical Journal* of March 9th Dr. H. W. van Allen has discussed the dangers to the operator from exposure to the x rays and their prophylaxis. He has reported seven cases in which men were exposed to the action of the x rays in the genital region with the production of more or less dermatitis. The following is an outline of these cases:—1. 12 exposures, the last four months ago. Spermatozoa normal. 2. 12 exposures, the last a year ago. Spermatozoa normal. 3. 35 exposures, the last five months ago. Spermatozoa absent. Sexual function apparently normal. Age 38 years. 4. Ten exposures a year ago. Spermatozoa normal. 5. 15 exposures four months ago. Spermatozoa absent. Age 56 years. 6. An x ray tube maker, aged 42 years, who had changed his occupation and not been exposed for six months. No spermatozoa. 7. 45 exposures, last one 14 months ago. Spermatozoa absent. Age 40 years. The cases of azoospermia were not those in which the dermatitis was marked but the ones treated the longest. The observations led Dr. van Allen to look for other effects. He found that in x ray workers of experience the skin and its appendages first suffer. The nails and the hair are brittle and of slow growth. The skin is dry and of a yellowish hue which is almost characteristic. Indigestion, especially of the intestinal kind, is present. The workers complain of inability to concentrate their thoughts for any length of time and are drowsy, although many suffer from insomnia. Their disposition is somewhat irritable. They complain of an abnormal sensation of cold. Radiographs of the thinner parts of the body show premature sclerosis of the arteries. To prevent such effects Dr. van Allen recommends that the operator should be entirely removed from

the x ray atmosphere. The whole apparatus except the tube should be in one room and the tube and the couch for the patient in an adjoining room. The wall separating the rooms should be covered with sheet lead not less than $\frac{1}{32}$nd of an inch thick. Through this should pass the wires to the tube. In the wall should be a peep-hole, which might be protected with the glass from which are made cut glass articles (containing as much as 20 per cent. of lead). Or the hole might be protected by means of two mirrors facing one another at an angle with the perpendicular of 45°, one covering the opening and the other above it. The silver-covered mirror would prevent the non-reflectable x rays from striking the operator but he could see by the ordinary rays of light reflected from the mirrors everything in the room. The mirror covering the opening could be depressed by means of a handle and the fluoroscope used to judge the tube and the character of the light which it gave off. The only objection to this plan is that fluoroscopy would be abolished but Dr. van Allen does not consider this a disadvantage, as he thinks that it is less trustworthy than radiography.

## INEQUALITY OF THE PUPILS IN PLEURISY WITH EFFUSION.

INEQUALITY of the pupils in diseases of the chest has been recently described by French writers. In 1902 M. Souques reported three cases of inequality of the pupils in pulmonary tuberculosis.[1] He attributed the inequality to pleuritic thickening and adhesion which involved and paralysed the pupil-dilating fibres of the sympathetic as they passed out from the cord in the ramus communicans of the first dorsal nerve. More recently inequality of the pupils in diseases of the lungs and the pleuræ has been discussed by Dehérain.[2] The subject of inequality of the pupils in pleurisy with effusion is almost entirely new. All that Dehérain says of it is that "in four cases of tuberculous pleurisy with serous effusion inequality of the pupils was constant for several weeks." He says nothing of the nature or the degree of the inequality or of its relation to the quantity and the nature of the effusion. M. A. Chauffard and M. L. Laederich have contributed an important paper on Inequality of the Pupils in Pleurisy with Effusion to the *Archives Générales de Médecine* of March 7th, in which they throw considerable light on these and other points. In pleurisy with effusion they found inequality of the pupils in seven out of 17 cases—i.e., in 41 per cent. of the cases. The larger pupil was almost always on the side of the effusion. The inequality varied much from day to day, sometimes even disappearing on certain days to return later. It was never found after the effusion was completely absorbed. The inequality was always moderate and never attained the magnitude observed in diseases of the brain and the spinal cord; sometimes it was so slight that it had to be looked for carefully by exposing the eyes to equal amounts of light with a medium condition of accommodation. On looking at a very near object the inequality disappeared; the pupils contracted to their maximum extent and became equal. The seven cases in which the inequality was observed comprised one case of "cardiac pleurisy" and six of tuberculous pleurisy. The 10 negative cases consisted of six cases of tuberculous pleurisy, one case of hæmorrhagic pleurisy (probably cancerous), two cases of pleurisy following pneumonia, and one case of "cardiac pleurisy." In these 10 cases all degrees of effusion were observed. Comparing the positive and the negative cases no relation could be traced between the amount of the effusion or the presumed condition of the apex of the lung in the tuberculous cases and the inequality. Paracentesis thoracis, even when 1250 cubic centimetres of fluid were removed, had no effect on the inequality. Discussing the cause of the inequality M. Chauffard and M. Laederich do not accept the mechanical theory put forward by Dehérain, that it is due to pressure of enlarged lymphatic glands or of the effused fluid on the pupillary fibres of the sympathetic. The fact that it varies from day to day is opposed to the former theory and the fact that paracentesis does not affect it is opposed to the latter. The inequality seems to be a functional phenomenon. Its explanation appears to lie in the dictum of Schiff: "All peripheral sensory irritation causes dilatation of the pupil." Probably it is due to irritation of the branches of the vagus distributed to the lung on the affected side. The unilateral character of the phenomenon is explained by Pflüger's law: "Reflex movements are first manifested on the side of the irritation."

[1] Bulletins de la Société Médicale des Hôpitaux, May 23rd, 1902, p. 484.

[2] La Presse Médicale, Oct. 1st, 1904.

## THE HEALTH OF MARGATE.

IN his report for the year 1904, Mr. Bertram Thornton, medical officer of health of Margate, draws attention to the healthiness of the town and the excellence of the water-supply. As is well known the population of Margate is liable to great variations on account of the immense influx of visitors during the summer months. The estimated population on which the birth-rate, the death-rate, and other numerical averages are based is computed yearly from the data obtained at the decennial census which is held in the month of March. In Margate the estimated population to the middle of 1904 was 24,263, but for a few weeks during the summer season the population probably exceeds 100,000. The birth-rate in the borough was 19·0 per 1000 and the corrected death-rate was 12·8 per 1000, both of them being below the corresponding averages of the last ten years; by excluding the deaths of visitors the general death-rate would be reduced to 10·7 per 1000. The water-supply from local sources had become so impregnated with salt (as much as 170 grains to the gallon) that a new supply obtained from the chalk has been brought from the district of Wingham, 14 miles from Margate. The chemical and the bacteriological analyses of this water have given very satisfactory results and the yield is more than equal to the demand.

## MILK-BORNE SCARLET FEVER.

AN outbreak of scarlet fever which occurred in the Little Woolton sanitary district in Lancashire is described in a recently issued report by Dr. C. Stuart Pethick, the medical officer of health, who inclines to the view that the infection was milk-borne. Little Woolton is a small township which in 1901 contained 218 inhabited houses with a population of 1091 persons. Between November, 1903, and March 29th, 1904, no cases of scarlet fever were notified, but between March 29th and April 16th there occurred 30 cases and of these patients 28 received their milk from the same dairy farm; in some of them the initial throat symptoms were severe and there were two deaths. On April 10th handbills were delivered at each house advising that the milk should be boiled and that no cans should be admitted to the premises. The farmer also ceased to supply milk from his own farm for a period of six days from April 12th. In Dr. Pethick's opinion the dates above mentioned point to the probability (1) that the outbreak was due to some infection of the milk which came into operation about March 25th, and (2) that for 10 or 11 days the milk was receiving a continuous supply of infection. The district then remained free from the disease until June 13th. On April 6th the farm was visited and a careful examination of all the persons residing or employed there was made without eliciting any explanation of the

outbreak. The milk, however, was supplied to 46 households in 20 of which the disease appeared. It was taken out in the farmer's cart and either ladled directly into the customers' vessels or into separate little cans which were left at the houses. Mr. Stafford Jackson, M.R.C.V.S., of Liverpool reported that the farmer's herd of ten cows was in a perfectly healthy condition and an examination made by Dr. Albert S. F. Grünbaum of the University of Liverpool showed that there were no micro-organisms in the milk beyond those ordinarily found.

## THE PRINCE OF WALES.

WITH reference to the recent operation upon the Prince of Wales we understand that His Royal Highness's progress is entirely satisfactory, an assurance which His Royal Highness's excellent health, his love of outdoor exercise, and his simple habits would lead us to anticipate.

## THE PROPOSED UNION OF MEDICAL SOCIETIES IN LONDON.

WE published last week a letter from the President of the Royal College of Physicians giving notice that a meeting would be held on Monday, April 10th, at 5 o'clock, at the Royal College of Physicians to consider the advisability of the union of the medical societies of London in one Royal Society of Medicine. It is certain that the idea has aroused the interest of members of the societies and that the meeting will be well attended. Among the leading men of our profession there are many in favour of the plan of union, some of whom will speak at the meeting. But, after all, it is not they who would most enjoy the advantages of a new Royal Society of Medicine but rather the younger men, who can ill afford the expense of belonging to many societies. There is a certain loss of enthusiasm in the present system because subjects which should be debated in the presence of all interested in them come up for notice now in front of one group of men and now in front of another. This means a loss of strength in the conclusions come to and should be remedied by a scheme of union.

## SCHOOL HYGIENE.

WE have but recently discussed some aspects of this important subject in a leading article[1] and we have now before us a report submitted to his health committee by Dr. A. Mearns Fraser, medical officer of health of Portsmouth. Dr. Fraser's report is practically a *précis* with comments by himself of the proceedings of the Conference on School Hygiene recently held at the University of London. He endorses the opinion so strongly upheld at the conference, and one in which we cordially concur, that every education authority should possess an expert medical and sanitary adviser. In his remarks on school furniture Dr. Fraser reminds his readers of what is perfectly obvious—namely, that children are of different sizes and therefore that one pattern of seat will never be quite satisfactory. He recommends a modified "Sheffield system," consisting of one fixed desk of such a length as to give room for six children. The children sit on separate seats with backs, and these seats as well as the desk are screwed to the floor. Dr. Fraser's modification is simply to make the support of the backs curved instead of straight. He maintains that the alternative of separate adjustable seats and desks for each child is too expensive to be adopted. Considering how important it is that all children should be able to sit comfortably upon their seats at such a distance from the desk as may suit them we should have thought that some way might be found of making that portion of the seat on which the child sits adjustable after the fashion of the back seat of a dog-cart without much additional expense. Dr. Fraser's report, however, is certainly well calculated to make the education authority which he addresses take an interest in the duty of providing sanitary methods of education for the 40,000 children with the care of whom it is intrusted.

[1] THE LANCET, March 11th, 1905, p. 653.

## GERMAN MEDICAL CONGRESS.

THE twenty-second "Congress for Internal Medicine" will be held from the 12th to the 15th of this month at Wiesbaden, under the presidency of Professor Erb of Heidelberg. Professor Ziegler (Jena) will deliver an address on the Present Position of the Doctrine of Heredity in Biology and Dr. Martius (Rostock) will read a paper on the Significance of Heredity and its Rôle in Pathology, especially in regard to Tuberculosis. Amongst the communications to be read at the Congress are the following:—The Treatment of Leukæmia by the Roentgen Rays, by Dr. A. Hoffmann (Düsseldorf); Investigations in regard to the Secretion of Mucus by the Intestines, by Dr. Schütz (Wiesbaden); the Treatment of Cardiac Affections by Electric Baths (Alternating Currents), by Dr. A. Laqueur (Berlin); the Mechanism of the Circulation, by Dr. Homberger (Frankfort); and Some Observations on Experimental Diabetes, by Dr. Lüthje (Tübingen). In connexion with the Congress there will be an exhibition of scientific instruments, apparatus, and preparations of special interest to physicians. Notices of communications are to be sent to Geheimrat Dr. Emil Pfeiffer, 13, Parkstrasse, Wiesbaden.

## ACCIDENTS IN MINES AND FACTORIES.

IN another column we publish a statement sent to us by the metropolitan branch of the Association of Certifying Factory Surgeons concerning certain clauses of the Bill now before Parliament to amend the Factory and Workshop Act of 1901. The Bill is down for second reading on April 10th but as the Budget is fixed for that day there is but small chance of its being considered. To put the matter shortly, the Act of 1901 divides accidents into two classes called A and B. Those in Class A are reported to the factory inspector and to the certifying surgeon and are investigated by the latter. Those in Class B are reported to the inspector only and no power apparently exists by which the inspector can report such accidents to the surgeon. The amending Bill, which is the outcome of the report of the Departmental Committee appointed by the Home Office to inquire into the notification of industrial accidents, seeks to overcome this anomalous position by practically eliminating the certifying surgeon. That is to say, accidents under both Classes A and B of the Act of 1901 (in the amending Bill they are divided into A, B, and C) are to be reported to the inspector only. The inspector shall then in such cases as the Secretary of State directs notify the certifying surgeon. The contention of the Association of Certifying Factory Surgeons is that Clause 4, Section (1) of the amending Bill should be amended by adding words to the effect that accidents coming under the heads of A and C should be reported to the certifying surgeon as well as to the inspector In our opinion it is unfair to lay upon the inspector (even when aided by the Secretary of State), who can obviously know nothing of the circumstances, the duty of deciding whether or not to report the accident to the surgeon. The inspector himself can have only the employer's version before him upon which to form an opinion and already the inspector appears to be much overworked. The report of the Departmental Committee, p. 18, states that, "on an average, he is only able to pay one visit a year to each factory." We invite Members of Parliament and others interested in the subject to consider carefully the objections and

suggestions made by the Association of Certifying Factory Surgeons and to examine the sections to which we have referred with the following question in their minds. Will the alterations proposed to be made tend to increase or to diminish the inquiry into all accidents in factories by competent and independent investigators? We do not, as the matter stands, see that the amount of information thus obtained will be augmented by the changes proposed.

## TODMORDEN'S WATERWORKS.

ONE of the conditions of modern life is that almost every town in the kingdom is engaged in a struggle for water. For some years Rochdale and Todmorden have been carrying on such a contest but after "a stiff Parliamentary fight" it was decided that Rochdale should take over the Ramsden reservoir and that Todmorden should construct works at Gorpley. The reservoir at the latter place has been constructed to hold 130,000,000 gallons which will give an estimated daily supply of 621,000 gallons exclusive of compensation water. "One feature of the work is the removal of all vegetation from the bottom and sides of the reservoir." As a result of this it is stated that the water, even without filtration, is remarkably free from colour. Notwithstanding this fine sand filters have been constructed of such area that the downward flow at the surface of the sand will only be about four inches per hour when all the water is being used. At this "slow rate of filtration a gelatinous film of mud and microbes forms on the surface and so long as this film is maintained intact the most minute organisms cannot pass it." What is very unusual is that the estimates of cost and also of rainfall were on the safe side. The total cost will probably be just over £90,000. The works were formally opened on March 23rd and the water was turned on by the chairman of the waterworks committee.

## THE AERIAL DISSEMINATION OF SMALL-POX.

AT a sessional meeting of the Royal Sanitary Institute held at Newcastle-upon-Tyne on March 4th of this year, Dr. Louis C. Parkes being in the chair, Dr. H. E. Armstrong read a short communication on the aerial dissemination of small-pox infection round small-pox hospitals. He drew attention to the issue in November last by Dr. G. S. Buchanan of the report to the Local Government Board on small-pox in Gateshead and Felling in relation to Sheriff Hill Small pox Hospital. Dr. Buchanan there expressed the opinion that the use of this hospital had been responsible, directly or indirectly, for a material portion of the epidemic in Gateshead and Felling and recommended that the hospital should no longer be used for the isolation of small-pox. Dr. Armstrong proceeds to give some interesting details in relation to a sharply defined group of 12 cases of small-pox at St. Peter's, in the east end of Newcastle, notified between June 27th and July 16th in last year. Ten of these cases occurred in one street of tenement dwellings; the remaining two cases were in closely adjoining streets. As careful inquiry failed to trace the origin of any of these 12 cases, attention was drawn to the possibility of infection having been conveyed through the air from Gateshead or Felling. Of the 12 cases of small-pox in question the possible infection period occurred on days when the wind was blowing from the south-east in five cases, from the south-west in one case, and from the south in six cases. In one instance only was the disease likely to have been contracted when the wind was in a northerly direction on days of possible infection. The significance of the foregoing particulars will be understood when it is explained that a south-east wind blows directly from the Felling Small-pox Hospital and a south-by-west wind directly from the Sheriff Hill Hospital across the river to the locality where the above cases of small-pox occurred. The former hospital is a little under a mile and the latter a little under two miles distant from the site of the outbreak of the disease. Dr. Armstrong refers to one possible explanation of the convection of the variolous poison to a great distance which has not yet received the attention which it deserves. House flies are frequently a pest in small-pox wards, settling on the face and other exposed parts of the patient when the eruption is pustular or crusting. With feet and proboscis perhaps laden with the poison they may presently reach the open air and may be carried by the wind to a considerable distance and so convey infection. The attainment of a suitable site for a small-pox hospital often presents the greatest difficulties but from recent experience there is no doubt that it should be as far removed from ordinary houses as is compatible with convenience of working and other practical needs.

IN Brisbane for the week ending Feb. 18th there occurred 5 cases of plague but none was fatal. As regards Hong-Kong a telegram from the Governor received at the Colonial Office on March 27th states that for the week ending March 25th there were 1 case of plague and 1 death from the disease. As regards the Cape Colony, the medical officer of health of the Colony states that for the week ending March 11th the condition of the Colony as to plague was as follows. At East London 4 cases of plague were discovered during the week. Plague-infected rodents were found both at Port Elizabeth and at East London and at the latter place was also found 1 plague-infected cat. In other districts there was no plague infection found in man or other animal.

A DONATION of £4000 from Mr. Alfred Beit and one of £3000 from Messrs. N. M. Rothschild and Sons towards the £100,000 required have been received by the treasurer of Guy's Hospital.

# A SANATORIUM ON WHEELS FOR THE TREATMENT OF TUBERCULOSIS.

BY WALTER H. HAW, B.A., M.R.C.S. ENG.

I SHOULD like to bring the following suggestions before the profession with regard to the treatment of phthisis, but before doing so I should preface my remarks with a few observations on the prevailing ideas in connexion with its treatment. The aims of the sanatorium regimen are practically as follows: provision for the plentiful supply of fresh air and sunshine; protection from cold winds, rain, &c.; regulated exercise; regulated rest; proper food and in sufficient quantities; encouragement of appetite; bathing; destruction of bacilli; prevention of dust; food for the mind; amusements; proper clothing; coöperation of the patient in his own treatment; and the whole with a view to increasing body resistance. These aims are carried out at great expense and trouble at sanatoriums and according to published accounts with much benefit to the patients. The advantages claimed are these: (1) constant medical attendance and supervision; (2) absence from disturbing influences; (3) good food and encouragement of appetite; (4) regulated rest and exercise; (5) the improving effect of seeing others improve; (6) the hope of getting well; (7) pure air; and (8) the patient learns how to live.

Although I do not intend to go into any details of the scheme I think that I shall be able to show that most, if not all, of these principles can be carried out in a simple way and in one which personally I have proved of benefit in an illness of my own, not however phthisis. The method is as old as historical South Africa and is simply the adaptation of the bullock wagon to the present-day needs of phthisical patients. My suggestion is, in short, a long journey by bullock wagon to occupy about six months. As my object is merely the suggestion of the plan I shall limit myself to a few details.

*Requirements.*—A strong bullock wagon which could be fitted up according to the fancy of the traveller, but one with a tent covering half the body of the wagon would be most suitable and it should be rainproof and provided with windows and well-fitting flaps. There should be steps also for mounting. A moveable bedstead and spring mattress for use either in or out of the wagon and all other necessaries of a bedroom could be arranged in the tented part and could be so made as to be easily disinfected. Racks for books, guns, &c., could be fixed around the sides. The flap covering in the front of the tent might have an opening for the head for night sleeping when the weather was not favourable. The luggage might be carried on the front half of the wagon and this might include camera, instruments for entomology, botany, &c., according to the taste of the traveller. A paraffin stove would be essential. Further, a cow in milk could accompany the bullock team and run alongside. As the rate of travel would be only two miles per hour and the outspans would be frequent there would be no fear of overtiring the beast. A fowl coop could also be swung beneath the wagon but should feathered neighbours be objected to they might be dispensed with, for fowls could always be obtained at the farmhouses. If taken the coop should be so constructed as to be easily cleaned and disinfected. A barrel for boiled water should also be provided as well as a bell tent and spittoons for collecting the expectoration if any. The clothing should be carefully chosen for extremes of heat and cold. Lastly, a good cook, a valet for those who could afford one, a driver and leader for the oxen, and, very important, advice from an old transport rider who knows the ropes of veldt travel. In fact, it would not be difficult to get one as driver.

Let us see how far the above principles of treatment can be carried out in what has been called the ship of South Africa.

*Fresh air.*—The patient would almost be compelled to live in the open air, the only protection, which, however, would be safe and ample, being the half tent on the wagon and the bell tent. As long as the weather was fine the patient would be by preference in the open air. In bad weather the tents would afford efficient protection. In fine weather he could sleep in the open, in less favourable weather he could sleep on the bedstead in the wagon tent, the head being in the open air through the opening in the forward flap of the wagon tent, proper provision being made against sun, wind, and rain for its protection. Details could very simply be arranged. It would be possible, then, for a patient to make a journey in a properly appointed wagon not only in comfort but in comparative luxury and to be breathing fresh and changing air for the whole of the time. The variability of the air I consider to be a matter of great importance and together with the varying nature of the atmospheric temperature it would tend quickly to increase the resistance of the body. As regards sunshine, I need only say that South Africa is the land of sunshine.

*Protection from cold winds and rain and in summer from the heat of the sun.*—As it has been proved by observers that cold *per se* is not harmful to phthisical patients this question resolves itself into one of clothing. Provision should be made for very cold weather, for it is by no means always warm in South Africa. On windy days a sheltered spot could usually be found for outspanning. Provision should also be made against heat but I may say that the heat in the southern portions of the colony is never unbearable. Rain must be guarded against by attention to the proper details.

*Regulated rest.*—Rest could be taken either during the time of travelling or during the time of outspanning. The two forms of rest differ, that during travelling being combined with more or less massage according to the nature of the road and is most conducive to appetite and sleep.

*Regulated exercise.*—Regulated exercise could be taken either during travelling or outspan hours. As the bullocks travel at the rate of about two miles an hour the rate could be varied; it would be quite easy for a weakly patient to get his exercise at any time of the day most suitable.

*Diet.*—Diet would be the chief difficulty but it might be overcome with the help of a good cook and a paraffin stove. I am informed by a good housewife that there should be no difficulty, given a good cook and stove, in making any delicacies required within limits, which limits are, I think, salutary. There need be no trouble in getting milk, vegetables, butter, butcher's meat, fowls, or eggs. Personally, I know of no better stimulant to the appetite than a holiday-trip in a bullock wagon. The water for drinking purposes would require to be boiled.

*Dust.*—In this regard there need be little fear that the dust encountered would be tubercle-laden except in those towns which had become so-called health resorts for consumptives, and such towns could be avoided, so that the only precautions in this respect would be to wear a nasal filter on dusty roads.

*Destruction of bacilli.*—The infection of the wagon from the patient would have to be guarded against by means of close attention to the expectoration, which should be carefully collected in spittoons and burnt at the next outspan. The whole wagon could be cleaned and thoroughly disinfected with its contents once a week. In fact, every precaution would have to be taken that no expectoration or discharge of any kind was left on any article in the wagon.

*Bathing.*—A light bath could be taken as part of the luggage but I think that most of the bathing should, after a time, be indulged in in the streams in those districts which are free from bilharzia.

*Mental food.*—A small library could be arranged in the wagon and there are good libraries in most of the towns. Splendid opportunities are afforded for botany, geology, ornithology, and entomology.

*Amusements.*—Shooting (birds and antelope), tennis, croquet, golf, boating, &c., could all be obtained at the proper times and places, if sought after.

*Society.*—Those fond of social functions could make a halt near a town. Acquaintances are soon made in South Africa. But social functions should be avoided during the treatment.

I have not gone into the matter of the cost of this plan of treatment of phthisis but I should roughly estimate the hire of a turn-out to be as follows: wagon, 2*s.* 6*d.* per day; bullocks, 6*d.* per head per day; driver, 5*s.* per day; and leader, 2*s.* 6*d.* per day. This is what I have actually paid for a wagon during a holiday. To wealthy people the best plan would be to purchase a turn-out and to sell it at the conclusion of the tour.

I hope I have said enough to point out the advantages of this method of treatment and I will now conclude with a word or two upon the disadvantages. To one born and bred in South Africa it would be somewhat hard to see the disadvantages, for such a mode of travelling means health pure and simple, but to those brought up in luxury, and especially to those who are phthisical and whose delicacy may seem a contra-indication, it might be thought that the partial "roughing it" would be a grave disadvantage. But this is not so. As in sanatoriums, the cases would have to be properly selected. It would, for instance, be madness to send a patient with advanced lung disease, high fever, and prostration on such a journey (it would be madness in theory but I believe that it has still to be proved so), but in suitable cases of incipient and quiescent lesions I do not think a more effective method of increasing body resistance could well be found, involving as it does fresh air, rest, exercise, wholesome food, mental and bodily change, and, I was almost going to say (so great is my belief in its efficacy from personal experience), the certain improvement in health. Of course, I could enumerate a long list of what would be looked on as disadvantages, but in the end these would be found to be really advantageous to the proper treatment of phthisis, which is the gradual education of the body to increased resistance to the tubercle bacillus. I wish that an abler pen than mine could have advocated this method, but failing this I send the foregoing in the hope that it may revive hope in the breast of some poor victim to the disease, and I think I may tell him with confidence that if his case is a suitable one and he has the means to carry out the treatment he will benefit enormously in health and vigour.

Knysna, Cape Colony.

PRESENTATION.—At Hong-Kong on Feb. 24th Dr. J. M. Atkinson and Mr. J. Bell, the superintendent of the Government Civil Hospital, were presented with a gold cigarette case each. The presentation was made by His Excellency Sir Matthew Nathan, on behalf of the Tsar, who had sent the cigarette cases out to the two recipients for their attention to, and care of, the officers and sailors of the Russian cruiser *Varyag*, while they were in Hong-Kong. The cases bear the Imperial crest set in diamonds.

# THE THOMPSON YATES AND JOHNSTON LABORATORIES REPORT.[1]

THIS interesting publication includes the Reports of the Trypanosomiasis Expedition to the Congo, 1903-1904 (Memoir XIII.), of the Liverpool School of Tropical Medicine and Medical Parasitology, by Dr. J. Everett Dutton, Dr. John L. Todd, and Dr. Cuthbert Christy; with a Comparison of the Trypanosomes of Uganda and the Congo Free State by Dr. H. Wolferstan Thomas and Dr. Stanley F. Linton, as well as a Note on Tsetse Flies, by Mr. E. E. Austen. The contents of the volume are largely devoted to subjects appertaining to tropical medicine and to trypanosomiasis and sleeping sickness especially. Some of the papers have already appeared in medical journals but it is convenient to have the important observations made by the members of the various expeditions sent out by the Liverpool School of Tropical Medicine brought together in one volume.

The first articles—No. I., Human Trypanosomiasis on the Congo, No. II., Human Trypanosomiasis and its Relation to Congo Sleeping Sickness, and No. III., the Congo Floor Maggot—have been published in various journals and formed the subjects of papers at the British Medical Association meeting at Oxford in July, 1904. Dr. Dutton, Dr. Todd, and Dr. Christy were engaged in elucidating and investigating the various points of trypanosomiasis as it affected human beings and their careful work is well known.

In article No. IV. Dr. Christy discusses the cerebro-spinal fluid in sleeping sickness (trypanosomiasis) and analyses the results of 104 lumbar punctures. The conclusions at which he arrived were: (*a*) That in many cases of trypanosomiasis the trypanosomes never find their way into the cerebro-spinal fluid and in those in which they do it is during a late stage of the disease; (*b*) that the parasites come and go in the fluid; (*c*) that they may appear in the blood without being present in the fluid and *vice versâ*; and (*d*) that there is no relation between the commencement of fever and other symptoms and the entrance of the parasites into the cerebro-spinal fluid.

Article No. V., by Dr. H. Wolferstan Thomas and Dr. S. F. Linton, is devoted to a Comparison of the Animal Reactions of the Trypanosomes of Uganda and Congo Free State Sleeping Sickness with those of Trypanosoma Gambiense. This article, which was published in THE LANCET of May 14th, 1904, gives a detailed account of the investigations which succeeded in showing that the trypanosomes found in (*a*) the cerebro-spinal fluid of cases of Uganda sleeping sickness, (*b*) the cerebro-spinal fluid of cases of Congo Free State sleeping sickness, (*c*) the blood of cases of Uganda trypanosome fever, and (*d*) the blood of cases of Congo Free State fever are all identical in animal reactions and morphology with the trypanosoma Gambiense. They further determined: (1) that there seems to be no acquired immunity against infection; (2) that there is no transmission of immunity to offspring; and (3) that an animal which seems to have recovered may months later show parasites once more, apparently as the result of lowered vitality.

Article No. VI., by Dr. Dutton, Dr. Todd, and Dr. Christy, gives a detailed account of Two Cases of Trypanosomiasis in Europeans. One case was that of a woman, aged 35 years, who gave the history of being severely bitten by "river flies" in August, 1901. This was succeeded in six days by a severe fever which lasted for 25 days. This attack was succeeded by a weekly fever which continued for three months. Each febrile attack lasted about five days. From January to April, 1902, the temperature ranged between 99° and 100° F. and was never normal. On arriving in England in April, 1902, the temperature gradually fell to normal and twice between the date of arrival and August, 1903, when she returned to the Congo, did febrile attacks occur. Red patches of about the size of a half-crown and lasting for three or four days appeared on the legs whilst in England. She had stiff joints and an "inflamed throat" and the eyes were "inflamed." On returning to the Congo febrile attacks again developed on Oct. 10th and Nov. 9th and 14th, 1903, but there was no more fever until March, 1904. On June 2nd, 1904, the last note on this patient was, "For last few days patient has complained of lack of appetite and loss of energy; the swellings on face and hands persist; a papular eruption has appeared on the chest." The other case recorded is that of a captain of a steamer on the Congo, aged 28 years. The inference gathered from a study of this case is stated as follows: "It therefore seems probable that the incubation period between the time of the infection with trypanosoma Gambiense and the appearance of the symptoms associated with human trypanosomiasis may be so short as four weeks."

Article No. VII., by Mr. Ernest E. Austen, is entitled "Supplementary Notes on the Tsetse Flies (Genus Glossina, Wiedemann)." Since Mr. Austen's publication of a monograph of the tsetse flies in 1903, when seven species of tsetse flies were recognised and described, an eighth species, glossina Decorsei, has been described by Dr. Emile Brumpt from specimens recently obtained by Dr. Decorse on the River Shari and the shores of Lake Chad. This parasite has already been described[2] together with a detailed account of the several species of the tsetse flies.

In articles Nos. VIII., IX., X., and XI., Dr. J. W. W. Stephens contributes four articles to the January series of 1905: (*a*) A New Hæmogregarine in an African Toad; (*b*) Two Cases of Intestinal Myiasis; (*c*) a Note on the Pathology of Tropical "Swellings"; and (*d*) Non-flagellate Typhoid Bacilli. The hæmogregarine was obtained from one of a batch of toads received from Sierra Leone in October, 1903. Although the description of the cyst and its polar masses of this recently observed parasite differs in some respects from previously described hæmogregarines in amphibians and reptiles, Dr. Stephens, owing to the similarities which it bears to others, is inclined to defer proposing a name for the gregarine which he describes. The larvæ of the flies met with in the intestine of two children in Liverpool were found by Dr. Stephens to belong to two species—viz., those of the musca corvina and the homalomyia canicularis. The patient, the subject of tropical swellings, went to Liverpool from Degama, Southern Nigeria. He was the subject of peculiar swellings in the hands, the arms, the face, and the feet which were of a fugitive character and seldom occurred in more than one place at a time. The leucocytic count (600 counted) gave large mononuclears, 1; small mononuclears, 23; polynuclears, 26; and eosinophiles, 50. No filariæ were found. The condition appears to differ from that present in "Calabar swelling."

Article No. XII., by Mr. A. E. Shipley, F.R.S., gives an account of a Human Parasite from Africa, the Cladorchis Watsoni (Conyngham). The patient came from German West Africa and was one of a gang of freed slaves. He had constant diarrhœa; the stools passed contained numerous reddish-yellow, translucent, gelatinous, oval bodies. After death the oval bodies were found in the contents of the upper part of the small intestine and proved to consist of a trematode belonging to the family paramphistomidæ (Fischoeder) and to the sub-family cladorchinæ. Man would appear to be but an occasional host of the parasite, the normal host being in all probability some herbivorous animal.

Article No. XIII., by Dr. Dutton, deals with the filaria of the African swift—Cypelus affinis. In the lice infecting the feathers of this bird the embryo of filaria cypseli was found. In the bird parent filariæ were found and embryos were met with in the lymph passages. The louse serves as an intermediate host and the bird by picking off the lice from amongst its feathers in all probability reinfects itself.

Article No. XIV. by Mr. Benjamin Moore and Mr. Herbert E. Roaf, is an elaborate account of an Experimental Study of the Physical Chemistry of Anæsthesia in Relationship to its Causation. Mr. Moore and Mr. Roaf conclude that chloroform forms an unstable chemical compound or physical aggregation with the proteids experimented with and that it is carried in the blood in such a state of combination. The oxygen-carrying power of hæmoglobin is not interfered with in presence of chloroform.

Article No. XV. by Mr. E. S. Edie, consists of a description of experiments on the Action of Chloroform on the Proteids of Serum and upon Solution of Hæmoglobin.

Article No. XVI. is devoted to an account of a Simple Method for the Preparation and Determination of Lecithin, by Mr. Roaf and Mr. Edie.

[1] The Thompson Yates and Johnston Laboratories Report, edited by Rubert Boyce and Charles S. Sherrington, with H. E. Annett, Benjamin Moore, Ronald Ross, and E. W. Hope, assisted by W. B. Warrington, E. E. Glynn, J. W. W. Stephens, A. E. Shipley, J. E. Dutton, J. L. Todd, H. Wolferstan Thomas, H. E. Roaf, Cuthbert Christy, S. F. Linton, and E. S. Edie. Pp. 205. With Illustrations and plates. Vol. VI. (New Series). Part I., January, 1905. Published for the University Press of Liverpool by Williams and Norgate, 14, Henrietta-street, Covent Garden, London. Price 15*s.* net.

[2] Brit. Med. Jour., August 20th, 1904.

# MEDICINE AND THE LAW.

### *The Determination of Age in the Living.*

THERE are numerous practical occasions when the age, usually of a minor, is of forensic interest. The fact may be required for registration purposes (marriage, census returns, or death), for exemption from attendance at school, and under the Employment of Children Act, 1893, for indictments under the Criminal Law Amendment Act, 1885, and the Prevention of Cruelty to Children Act, 1904, for superannuation, and notably in the application of the legal presumptions that a child of less than seven years is incapable of committing an indictable offence and can only be punished if under 14 years of age on proof of actual malice. English statutes usually impose the onus of proof upon the defendant; at the common law in cases of dispute infancy is presumed. Certificates of birth, baptismal registers, and, as with a case in 1808, the receipted entry in an accoucheur's day-book have all been produced and admitted as valid evidence. There are, however, cases where such documentary evidence is not forthcoming; the age of these persons must be presumed; they include persons born abroad, orphans, and homeless wanderers. It is a well-known fact that skilful clinicians may cultivate the instinct of correctly surmising the age of their patients to a remarkable degree of accuracy. The precision is usually greater when the facial inspection occurs with the patient in bed and unadorned by deceptive peculiarities in the mode of dressing the hair or arranging the clothes. Recent Acts have adopted the principle of facial diagnosis: "Where a child is ..... alleged ..... to be under any specified age and the child appears to the court to be under that age, such child shall for the purposes of this Act be deemed to be under that age unless the contrary is proved." Bracton in 1219 relates how the evidence of the mother and other relatives was admitted and also how a jury of 12 "legales homines" was empannelled for the determination of the age of a would-be minor. To-day an affidavit or a statutory declaration before a magistrate may be necessary as a warranty and hence arises the nice legal point as to how far, apart from documentary and hearsay evidence, a person can be said to know his own age—a point which was raised recently in the State of Iowa Courts. To what extent can the physiologist afford real evidence by the "ocular demonstration" of which a scientifically accurate result may be obtained where a living person's exact age is in dispute? The state of dentition may assist and, perhaps, the presence of secondary sexual characteristics may be of service. Stow, the chronicler, tells us that it was the rude application of this latter test by a collector of the poll-tax which culminated the discontent and led to the peasants' insurrection of 1381.

### *Embalming in its Medico-legal Relations.*

In the United States of America the temporary preservation of the dead body from putrefaction is becoming increasingly popular and in England there are nearly 50 towns where embalmers skilled in the art are to be found. Interest is therefore raised by the discussion which the New York Medico-Legal Society has just concluded on a report presented by a select committee of its members appointed to consider a case (The People *v.* Patrick) where a prisoner was sentenced to death for murder (homicide in the first degree) by the New York Criminal Court in 1902. The following were the main facts of the case. A man, aged 84 years, died, the certificate of his regular medical adviser affirming several causes of death which in sum amounted to the diseases to which the aged are heirs. Two hours after death, before rigor mortis had set in, an embalmer injected a solution of formalin into the right brachial artery of the deceased, no blood being abstracted from the body. 41 hours later a necropsy was performed prior to cremation. Among other conditions it was recorded that the lungs were "congested and œdematous"; the lungs were cremated with the corpse. Some time afterwards the valet of the deceased confessed that while the old gentleman was lying on his back asleep he placed a sponge soaked with chloroform and covered by a towel over his aged master's mouth and then left him for half an hour. On his return death, he said, had supervened. He then burned the sponge and the towel which, he stated, blazed as if they were "soaked with oil." Collateral evidence gave no hint that there were any traces, to sight or to smell, of chloroform having been recently used in the room or on the person of the dead man. The valet's confession, together with the report of the condition of the lungs at the time of the necropsy, were held to substantiate the crime and accordingly he was sentenced capitally. It was decided by the society to investigate the purely medico-legal facts in issue, quite apart from the legal questions of motive and intent; hence the nomination of a committee of experts and its report referred to above. The conclusions may be summarised thus: the naked-eye appearances produced in the lungs by the method of embalming employed in this case might be mistaken for ante-mortem congestion and even for asphyxia by chloroform, microscopical examination would be necessary in order to differentiate the alternative conditions; the jury was hardly warranted in giving its verdict on the partial evidence adduced, for there was nothing in the appearance of the lungs *per se* conclusive or even indicative of the cause of death, indeed, the original death certificate was warranted by the facts presented; the embalming process may complicate the true post-mortem appearances of a corpse. Where it is desired by friends to have a dead body embalmed it may be taken as a good rule not to commence the operation until the formal certificate of death has been received.

### *Neglect to Call a Medical Witness.*

It is not easy to understand the attitude taken up by Mr. E. H. Hall, the coroner at Halifax, in holding an inquest upon the body of a gentleman well known in the borough who beyond doubt had committed suicide when depressed by business worries. The verdict found under the explicit direction of the coroner to that effect was that the deceased died from a wound inflicted on himself but that there was not sufficient evidence as to the state of his mind at the time. This would give the impression to anyone hearing of it that the deceased had committed *felo de se* or that at all events no one had noticed any peculiarity of demeanour or otherwise before his death who could speak with any authority upon the matter. As a matter of fact, however, Dr. Arthur Drury, who had been the medical attendant of the deceased for 16 years, had on the evening before his death had a prolonged interview with him and this gentleman within a few hours of the death informed the coroner that he had evidence to give of importance directly bearing upon that subject which, to the survivors at all events, is of the greatest importance upon such occasions. Many coroner's juries return verdicts of "Suicide during temporary insanity" with but scanty evidence to justify them, but the rejection of evidence tendered by a medical man which might be conclusive upon the point is unusual and undesirable.

### *A Death due to Christian Science.*

A letter recently published in the *Westminster Gazette*, and probably in other newspapers, gave particulars of a very sad case of wholly unnecessary death due to the absurd craze or imposture known as Christian Science, which in some respects differs from other reported instances of the same kind in that, to the majority of her relatives, at all events, the deceased was not known as a "Christian Scientist." The writer does not disclose either his own name or that of those directly implicated but there seems to be no reason to doubt the truth of the facts narrated and there are obvious causes for anonymity being preserved. The deceased, a lady and an old friend of the writer, went to stay with her son, a "Christian Scientist," residing in London, from whose peculiar views she had until then been believed to differ. A fortnight later her relatives were informed by the son that she had been taken ill and had "passed on," apparently a "Christian Scientist" euphemism for death. Inquiry showed that she had had a severe attack of influenza and under "Christian Science" treatment had developed acute bronchitis. A medical man had been called in when she was dying; he had not been told anything about "Christian Science" being involved, and when a few hours later the lady died he had given his certificate as to the cause of death which was not in any way obscure. This apparently was the only reason for his intervention being sought at the eleventh hour. The relatives of the lady, acting under natural indignation against the travesty of religion named and having no legal redress against the son or any other of its practitioners, desire to make the case public for the warning of others. It presumably was an occasion upon which, had the medical certificate been withheld, an inquest would have followed, at

which some inquiry would have been possible as to the opportunity which the unfortunate lady had for obtaining medical aid and how far she herself acquiesced in the absence of it. Whether at this late period the matter should be reopened is another matter; presumably there is no evidence to justify any action being taken. Had the deceased been a child the matter would, of course, have assumed a different complexion.

## THE MEDICAL INSCRIPTIONS OF THE COLUMBARIUM LIVIAE.

THE immense collection of inscriptions dating from the time of the Roman empire that has been gathered together in the great "Corpus Inscriptionum Latinarum" necessarily contains many texts relating to medical men in various parts of Italy and even in the distant provinces of the Roman empire. The volumes, the contents of which are confined to the publication of inscriptions discovered in Rome or its neighbourhood, present more than the average proportion of these medical memorials because they include the series of many physicians and surgeons whose remains were placed in the "columbarium" of Livia, wife of Augustus, which was excavated, near the Appian Way, in A.D. 1726. The texts from this special site, as will appear, throw a vivid light upon the organisation of the various classes of professors of the healing art as permitted to exercise their vocation in the time of Augustus under a system really determined by Cæsar's decree regulating the cultivation of all arts and sciences. For a complete account of the information afforded as to medical matters by Latin inscriptions it will be necessary to quote and to comment upon many texts relating not to practitioners but to the deity Æsculapius, and his hierarchy, because it was within his temple that the medical profession first dispensed the benefits of its knowledge to their fellow men. But the present notes will be confined to a summary of various inscriptions relating to medical men in the time of the Cæsars.

Two texts from the Columbarium Liviae may be quoted as indicating different grades of medical officers at the court. The first reads: M . LIVIVS . LIVIAE . L . ORESTES . SVPRA . MED. This shows that Orestes, perhaps of Egyptian origin, had attained to the position of supra medicus, "superpositus medicorum," an office evidently of superintendent of all those under his command engaged in the treatment of disease. It may be also that he had the rights of inspectorship and supervision over persons indirectly connected with medicine, such as the adiutores valetudinarii and unguentarii and others. The second text preserves the title of a "decurio medicorum"; it reads: M . LIVIVS . BOETHVS DEC . MEDICO.

The following inscription derived from the same place gives the name of a surgeon; it is No. 3986 in the "Corpus." AVG . HILARVS . MEDIC . CHIRVRG. Another which succeeds it would seem to indicate the commencement of specialism, though merely reading MEDIC . OCVLARIVS, the name having unfortunately been broken away. Aural specialists were known to have flourished and classic authors speak of them. A text in the Naples Museum confirms this, it being that of "T. Aelius . Aminias Medicus Auricularius." Another of these known from literature was named Celadianus who practised under Augustus. His memorial epitaph was recovered near the Via Latina and shows that he died whilst quite young. It reads, "Thyrius Ti ..... Cæsaris, Aug ..... Ser ..... Celadianus Medicus Ocularius. Pius parentium suorum. Vixit Annos XXX." The next inscription is that of a freedman, not of Livia but of Drusus, and is given here because it is perfectly legible throughout. It may be found in the sixth volume, Part II. of the "Corpus" under the head of "Monumentum libertorum Drusi."

CHRETE . CONSERVEE
ET . CONIVGI . CELADVS . ANTON
DRVSI . MED . CHIRVRG
B(ene) MERENTI . FECIT
VIXIT . ANNOS XVII.

To be specially appointed physician to the Court was just as much an honour then as now and therefore a high office worthy of record in the sepulchre. Therefore a text discovered in the Via Latina reads: "D. M. RVPILIO . CALPVRNIANO . MEDICO . DOMVS . AVGVSTAE," &c. Sometimes these lapidary memorials relate to personages already familiar to us from classic authors or to members of their family. For instance, Pliny, writing of the famous medical men of his time, mentions five names, saying: "Multos præterea medicos celeberrimosque ex iis Cassios, Calpitanos, Aruntios, Albutios, Rubrios." The succeeding inscription of the time of Domitian refers to a member of the Aruntii family. It was found in the Via Nomentana and is No. 8895 of the "Corpus":—

L . ARRVNTIO . SEMPRONANO
ASCLEPIADI
INP . DOMITIANI . MEDICO
T(estimentum) F(ieri) I(ussit).[1]

For signal service to a member of the Imperial family the attendant might be awarded a decoration. Thus the physician of Faustina obtained insignia ATMETO . MEDICO . ET . PARTENOPAEVS . FAVSTINAE . AVG . SERVI . OB . ORNAMENTIS . AMICO . BENE . MERENTI . FECERVNT. Other names given in inscriptions of the early Cæsars are Claudius Athenodorus, doubtless a Greek, Cyrus, perhaps a Persian, Eros, and Titus Flavius who would, however, date from the period of the Flavian Emperors. A personage named Sterope is another instance of a decurion of medicine.

The next inscription is given because it informs us of the existence of a medical library which there is reason to believe was founded by Augustus, or it may be that he was specially custodian of the medical works in the great library.

AVG . L . HYMENAEVS . MEDICVS . A . BYBLIOTHECIS .
ET . DOMITIA . PANNICHIS . SIBI . ET . SVIS
POSTERISQVE . EORVM.

There was a College of the Archiatri whom we shall presently find mentioned in these lapidary texts and it is apparent that there were medical colleges in all the greater cities as there was one upon the Esquiline Hill at Rome. A text at Beneventum refers to property of the medical college there "in perpetuum ad collegium medicorum pertinet." A college would require a secretary, and from Naples we have the epitaph of such a one. "D. T. Aurelius . M. Telesphorus, Scriba Medicorum." The scribe, or clerk, probably was a copyist of medical works belonging to the college. A cippus of a medical man, Curtianus, at Praeneste, has beside its inscription graven upon it a representation of certain surgical instruments and of books. The Archiatri were a superior order of physicians organised by Nero and were of two orders, the "Archiatri palatini" or court physicians and the "Archiatri populares." Antoninus Pius ordained that a committee of these should be formed in all the great cities, by election by the citizens, but it is thought that before they were eligible for such an election they had to pass an examination conducted by the chief college of the Archiatri. We have at least four inscriptions of Archiatri from Rome, one named Timotheus, another Aratus, whilst in the other two the names are obliterated.

We have seen that persons of provincial parentage, certainly Greeks, practised in Rome and there is a text of one "Rapetiga Medicus civis Hispanus" who died under Augustus. Another inscription reads "Egypto Medico Tertia filio carissimo posuit." An oculist P. L. Philogenes was also a Greek. An inscription of a medical man, Demetrius Trallianus, from the province of Naples, is written in Greek, and may be found in the "Inscriptiones Regni Neapolitani" of Mommsen. There were ladies who adopted the healing art as their profession. From the Quirinal comes a text of "Minucia Medica." In the Vatican Museum is one of "Julia Medica," another honours "Terentia Niceni Terentiae Primae Medica." Veterinary surgeons are also represented. No. 9610 in the Corpus is of one APOLLODORVS ..... MEDICVS . EQVARIVS .....; another reads SECVNDINVS . MVLOMEDICVS., and there are more of these. Inscriptions of surgeons attached to the legions naturally are discovered nearer the frontiers. One found in Rome is of a naval surgeon, T. Flavius Euprepetius, who was attached to what might be termed the "home fleet," stationed at Misenum, the marine station of which was just north of Naples. As physicians of the fair sex have been referred to the record of a midwife deserves mention. Her name is an appropriate one: HYGIA . MARCELLAE . L . OBSTETRIX.

[1] No. 8897 of the "Corpus" refers to one of the Cassii; and Stertinus Xenophon, the celebrated physician, is mentioned in 8905, a monument in the Vatican Museum.

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, April 7, 1827.

### HOSPITAL REPORTS.

### HOSPITAL OF SURGERY,

*Panton Square, St. James's.*

#### AMPUTATION OF THE LOWER JAW.

A FEMALE, æt 16, had an ovoid tumour about the size of a turkey's egg, situated upon the right side of the lower jaw, its base extending from the angle of that bone, to within a few lines of its symphysis. The skin covering it was of its natural colour, and moveable on the surface of the tumour. The swelling was firm and unyielding to the touch, and attached by a broad basis to the bone, so as not to admit of any motion. On examining the inside of the mouth, the tumour was found to extend from the last molar to the second incisor tooth of the same side, and the internal lamina of the bone was pushed outwards by the swelling.

She states that the disease first began about three years ago in the form of a gumboil, some weeks after having received a severe bruise on the site of the present tumour; after this, the jaw was observed to swell, and very gradually to increase in size, attended, at intervals, with acute pain until May last, when it had acquired almost its present bulk. An attempt was then made to remove the tumour, it being thought practicable to detach it from the bone. However, on cutting down upon it, the disease was discovered to penetrate into the substance of the bone itself, and a portion only of the tumour was accordingly removed. Soon after this operation, the tumour began again to grow, and increased in size, even more rapidly than before.

As the tumour now involved the whole shaft of the bone, and as it was considered probable that the disease would soon extend so far into the mouth as materially to interfere with deglutition, and sooner or later destroy life, the girl was advised to submit to the complete excision of the affected portion of the jaw-bone; this she assented to, and, accordingly, the operation was performed on the 25th ult.

*Note of the Operation, by Mr. Wardrop.*

"The operation consisted in,

1st, Making an incision along the cervical edge of the tumour, which commenced at the angle of the jaw, and extended to a little beyond the chin.

2dly, An incision was made at right angles with the first, commencing a little anteriorly to the insertion of the masseter muscle, and extending up the cheek near to the molar bone.

3dly, An incision was next made, dividing the under lip and soft parts of the chin, at right angles, with the first incision.

The two flaps thus formed were dissected back, laying open the cavity of the mouth, and completely exposing the whole of the upper part of the tumour. The edge of the masseter muscle, which lay in immediate contact with the edge of the tumour, was carefully dissected back, sufficiently to expose the bone for the application of the saw. The section of the bone was made immediately behind the last of the large grinders, in an oblique direction, from without inwards. In consequence of the thickness of the soft parts covering the bone, the prominence of the tumour, and the closeness of the upper and under jaw at that part limiting the action of the saw, this was rendered by far the most difficult step of the operation, and it was the most hazardous from the contiguity of so many important organs. The next step of the operation, consisted in sawing through the bone between the two central incisor teeth, which was easily accomplished. The portion of the jaw to which the tumour was attached being now liberated it was easily turned outwards, so that it admitted of being readily dissected from the soft parts within the mouth, with which it was connected. Great care was taken, in this part of the dissection, to divide the soft parts close to the bone.

During the operation it was computed that the patient lost not less than two pounds of blood, the vessels which were divided having bled very freely. Several branches of the angular artery were secured with ligatures, as well as the coronary artery of the lip, during the operation, and only two vessels were tied after the removal of the tumour; the dental artery did not bleed; the lingual artery was exposed, but not wounded.

The edges of the wound were readily brought together, one silver pin being put into the lip at its red edge, and the rest was kept in contact by stitches of the interrupted suture, and a few pieces of adhesive plaster. No bandages or dossils of lint were used, and the parts assumed quite a natural look, when compared to their hideous appearance during the performance of the operation. She endured the operation with the greatest fortitude; and notwithstanding the large quantity of blood lost by so feeble a person, and the great state of exhaustion to which she was reduced, she was not allowed to get wine, or any other cordial, fearing the danger of inflammation supervening, which might have prevented the wounds of the integuments being healed by adhesion."[1]

## VITAL STATISTICS.

#### HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8860 births and 4711 deaths were registered during the week ending April 1st. The annual rate of mortality, which had been 17·2, 15·8, and 15·9 per 1000 in the three preceding weeks, declined again last week to 15·7 per 1000. In London the death-rate was 15·1 per 1000, while it averaged 16·0 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·8 in Handsworth (Staffs.), 7·4 in Hornsey, 8·0 in East Ham, 9·8 in Bury, 10·5 in Leyton, 10·7 in Grimsby, and 10·9 in Burton-on-Trent; the highest rates were 23·3 in Middlesbrough, 24·3 in Coventry and in Tynemouth, 24·6 in Sunderland, 24·7 in Wigan, 25·8 in Hanley, and 27·5 in Merthyr Tydfil. The 4711 deaths in these towns last week included 483 which were referred to the principal infectious diseases, against 471, 430, and 494 in the three preceding weeks; of these 483 deaths, 214 resulted from measles, 106 from whooping-cough, 51 from diphtheria, 46 from diarrhœa, 33 from scarlet fever, 31 from "fever" (principally enteric), and two from small-pox. No death from any of these diseases was registered last week in Bournemouth, Great Yarmouth, Wallasey, Huddersfield, Rotherham, or York; while they caused the highest death-rates in Southampton, Reading, Hanley, Wigan, Bolton, Middlesbrough, Stockton-on-Tees, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Portsmouth, Southampton, Reading, West Bromwich, Wigan, Middlesbrough, Stockton-on-Tees, and Merthyr Tydfil; from scarlet fever in Northampton and in Oldham; from diphtheria in Stockport and in Middlesbrough; from whooping-cough in Tottenham, Hanley, Stockport, Preston, and Middlesbrough; and from diarrhœa in Oldham. The mortality from "fever" showed no marked excess in any of the large towns. One fatal case of small-pox was registered in Burnley and one in Hull, but none in any other of the 76 large towns. The number of small-pox patients in the Metropolitan Asylums Hospitals, which had been 16, 23, and 20 at the end of the three preceding weeks, was again 20 at the end of last week; two new cases were admitted during the week, against three, nine, and three in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday last, April 1st, was 2032, against 2036, 2042, and 2034 on the three preceding Saturdays; 254 new cases were admitted during the week, against 303, 262, and 274 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respira-

[1] On page 21 of the same issue of THE LANCET appears a paragraph containing the following editorial comments:—"A report of Mr. Wardrop's formidable operation of amputation of the lower jaw will be found at page 27 of our present Number. This case has produced great sensation throughout the profession, and a vast concourse of practitioners and foreigners of distinction continue to visit the patient, all of whom express, in the warmest terms, their approbation of the boldness and skill displayed by the operator. The wound is nearly healed, and the improved appearance of the girl's countenance is most striking."

tory system, which had been 304 in each of the two preceding weeks, declined again last week to 273, and were 97 below the number in the corresponding period of last year. The causes of 58, or 1·2 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Nottingham, Salford, Leeds, Hull, Newcastle-on-Tyne, and in 42 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Smethwick, Aston Manor, Liverpool, St. Helens, Warrington, Preston, Sheffield, Sunderland, and South Shields.

### HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 18·6, 18·2, and 18·3 per 1000 in the three preceding weeks, declined again to 16·9 per 1000 during the week ending April 1st, but was 1·2 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·7 in Perth and 16·5 in Paisley, to 17·9 in Leith and 18·6 in Greenock. The 568 deaths in these towns included 20 from whooping-cough, eight from diarrhœa, five from measles, five from diphtheria, four from "fever," and one from scarlet fever. In all, 43 deaths resulted from these principal infectious diseases last week, against 58, 52, and 59 in the three preceding weeks. These 43 deaths were equal to an annual rate of 1·3 per 1000, which was 0·3 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 31, 17, and 33 in the three preceding weeks, declined again last week to 20, of which 14 were registered in Glasgow, two in Edinburgh, and two in Aberdeen. The deaths from diarrhœa, which had been 17, 13, and eight in the three preceding weeks, were again eight last week and included five in Glasgow and two in Aberdeen. The fatal cases of measles, which had been six, ten, and six in the three preceding weeks, further declined last week to five, all of which were registered in Glasgow. The deaths from diphtheria, which had been two, eight, and ten in the three preceding weeks, declined again to five last week, and included three in Glasgow. The fatal cases of "fever," which had been three and one in the two preceding weeks, rose again last week to four, of which two occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 153, 140, and 133 in the three preceding weeks, further declined last week to 105 and were 52 below the number in the preceding week. The causes of 19, or more than 3 per cent., of the deaths registered in these eight towns last week were not certified.

### HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 25·2, 23·8, and 22·4 per 1000 in the three preceding weeks, rose again to 24·9 per 1000 during the week ending April 1st. During the past 13 weeks the death-rate has averaged 24·6 per 1000, the rates during the same period being 16·8 in London and 17·8 in Edinburgh. The 181 deaths of persons belonging to Dublin registered during the week under notice were 18 in excess of the number in the preceding week, and included eight which were referred to the principal infectious diseases, against two, eight, and seven in the three preceding weeks; of these, four resulted from measles, two from diarrhœa, one from scarlet fever, and one from diphtheria, but none from small-pox, whooping-cough, or "fever." These eight deaths were equal to an annual rate of 1·1 per 1000, the death-rates last week from the principal infectious diseases being 1·1 in London and 0·5 in Edinburgh. The four fatal cases of measles corresponded with the number in each of the two preceding weeks. The 181 deaths in Dublin last week included 26 of children under one year of age and 47 of persons aged 60 years and upwards; the deaths of infants showed a slight excess, while those of elderly persons were fewer than those in the preceding week. Three inquest cases and two deaths from violence were registered; and 57, or nearly one-third, of the deaths occurred in public institutions. The causes of 11, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

## THE SERVICES.

### ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Fleet-Surgeon Horace Elliott has been placed on the Retired List at his own request (dated April 1st, 1905).

The following appointments are notified:—Fleet Surgeons: J. W. O. Underhill to the *President*, for three months' course at West London Hospital; J. Chambers to the *Duncan;* and J. Andrews to the *Blenheim* on commissioning.

### ROYAL ARMY MEDICAL CORPS.

Major E. M. Morphew is appointed to the Eastern Command for duty at Colchester; Captain A. M. MacLaughlin is temporarily posted to the Military Hospital, Belfast; and Major F. W. Begbie, from Ceylon, is appointed to the London District. Captain H. W. Vaughan-Williams retires on a gratuity (dated April 5th, 1905).

### ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain C. R. Lawrie to be Surgeon-Major (dated March 25th, 1905).

### VOLUNTEER CORPS.

*Submarine Miners:* The Mersey Division: John Owen to be Surgeon-Lieutenant (dated April 5th, 1905).

*Rifle:* 7th Volunteer Battalion the Royal Scots (Lothian Regiment): Surgeon-Lieutenant-Colonel J. L. Crombie resigns his commission and is granted the honorary rank of Surgeon-Colonel, with permission to wear the prescribed uniform (dated April 5th, 1905).

### ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Sherwood Foresters Bearer Company: Captain R. H. Luce is granted the honorary rank of Major (dated April 5th, 1905).

### VOLUNTEER OFFICERS' DECORATION.

The following have received the above decoration:—*Rifle:* 20th Middlesex (Artists') Volunteer Rifle Corps: Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel (Honorary Captain in the Army) Richard Reginald Sleman. *Southern Command: Artillery:* 1st Gloucester Royal Garrison Artillery (Volunteers): Surgeon-Lieutenant-Colonel David Samuel Davies, retired. *Welsh and Midland Command: Rifle:* Sherwood Foresters Bearer Company Royal Army Medical Corps (Volunteers): Captain Richard Harman Luce.

### THE ARMY ESTIMATES.

The inconclusive debate on the Army Estimates still continues in the House of Commons and the country should be well informed upon the fundamental principles of army organisation advocated by Mr. Arnold-Forster if frequent insistence of them on his part can carry conviction. But unfortunately while there are a great many people who are quite ready to agree with the War Minister so long as he confines himself to dealing with generalities they want to know a great deal more about the practical working of his scheme than he is in a position to tell them, and in the meantime the state of the army is suffering from the present chaotic condition of things. The supply of officers, dissatisfied with the present state of affairs and full of uncertainty and misgiving as to their future, is falling off. As everyone knows there has hitherto been no lack of army candidates in this respect. It was in regard to the supply of the men that the lack existed and in the present state of public opinion regarding compulsory service it is likely to continue. In such circumstances it would seem desirable that every inducement should be given and every facility furnished for increasing the strength and raising the standard of the volunteer forces of this country. We have no hesitation in saying that no scheme of army reform will prove successful which does not take full account of the prominent part which the sanitary and medical branches of the army are destined to play in modern warfare. We fail to see that the present scheme does this. The question of army reform and reorganisation is no party question; it concerns not only this country but the whole empire and we are glad to notice a proposal that it should be referred to, and considered on that basis by, a body composed of the best men of both

political parties with the aid of some naval and army experts.

### THE FRENCH ARMY SYSTEM.

It may be interesting at the present time to know that the law authorising the adoption of a two years' service system has been definitely voted by the French Parliament. The new arrangement is that the Frenchman is to serve for two years in the active army, 11 years in its reserve, six years in the territorial army, and six years in the territorial reserve. The service will count from Oct. 1st in the year of entry.

### THE WAR IN THE FAR EAST.

Beyond the fact that a part of the Japanese force is reported to have driven the Russians from Mien-hua-chieh and to have occupied that village and the heights to the north of it the situation in other directions is unchanged. Although we hear nothing officially of the Japanese movements their armies are nevertheless said to be slowly advancing. There is no medical news. The weather has become warmer and the sufferings of the troops in this respect have been mitigated. The rumours of peace and of a preliminary armistice in consequence, which were so currently and confidently circulated last week, have died a natural death. We did not allude to them because we thought that such rumours were mainly explicable upon the assumption that "the wish was father to the thought," and we discredited the idea that in the then existing state of things Japan could consent to any suspension of hostilities.

Various statements have been made as to the losses suffered by the Russians at Mukden and in the retreat therefrom but they have all lacked official authority. In St. Petersburg the total casualties during the battle and retreat are set down at 105,000, while in Tokio double that number has been mentioned. According to General Trepoff, director of the medical service in Manchuria, the numbers of the sick and wounded sent to the rear of Tieling between Feb. 28th and March 14th were 1739 officers wounded and 433 sick; 56,723 men wounded and 4975 sick. Moreover, 800 wounded had to be left at Mukden, with two field hospitals and two Red Cross hospitals. The revised unofficial estimate of the Japanese casualties at Mukden and Tieling puts the figure at 57,000. The recent publication at Tokio of an Imperial message to General Kawamura and his force puts us in possession of information which clears up any doubt that might have existed regarding that army which is now officially designated as the army of the Yalu. It rendered signal service at the battle of Mukden by drawing off a large portion of the Russian forces to the north-east.

### HEROIC SISTERS OF MERCY.

The correspondent of the *Russkoe Slovo* says that the conduct of the medical staff during the disastrous fight at Mukden merits special mention and constitutes a bright page in that sad story. Many medical men besides six Sisters of Mercy were seriously wounded during the engagement. Sister Chomiakoff specially distinguished herself. In front of Fushun she continued almost without help to bandage the wounded up to the last moment and only left the field after they had all been removed. For two days the Sisters, quite forgetful of self, fed the sick and wounded. Many did not sleep for days together, there being no room in the carriages for them to lie down. The young Sister Tatian Mirkovitch and the wife of General Sidorin for a time worked day and night without ceasing.

### NON-PIERCING BULLETS INDUCING AGGRAVATED WOUNDS.

On the occasion of the meeting of the Pirogoff Society, St. Petersburg, held on March 15th, Professor N. A. Kaldiana communicated a report on the wounds inflicted in the disturbances on Jan. 22nd in that city. The wounded were taken to the Petropavlovsk Hospital. They consisted of 43 persons, of whom 20 were injured by bullets. The first aid consisted of antiseptic bandaging. The search for bullets and their extraction were delayed until first aid had been given to all the patients admitted. Many of the wounded after being bandaged went home to return on the following day for examination. The complications ensuing on injury by bullets were somewhat serious. Notwithstanding the short distance between the victims and the soldiers, about 200 or 300 paces, most of the bullet wounds showed only a point of entry. Professor Kaldian explained that this curious circumstance is to be attributed to the fact that the soldiers aimed at the lower extremities, so that the wounds were caused by ricochet. Some of the wounds appeared as though inflicted by splinters of bullets. Exact statistics of the numbers treated could not be furnished as the medical men engaged on the work were too busy to keep account. On the whole, most of the wounds followed a favourable course, all the sufferers having recovered.

# Correspondence.

"Audi alteram partem."

## THE "MICROBE DOYEN."

*To the Editors of* THE LANCET.

SIRS,—As the question of cancer is of interest at the present time I think it would not be amiss to state in a few words the position according to the researches of Dr. Doyen. Dr. Doyen has now made investigations for many years. In 1900 he obtained a culture of a microbe which he found in various cases of malignant tumour; he called it the micrococcus neoformans and was the more convinced that it was the true cause of cancer in that it differed from all other organisms with which he was acquainted. In 1904 he read before the Congrès de Chirurgie a communication in which he gave an account of 242 cancerous patients treated by means of his serum and claimed that 40 of them were greatly improved. This communication gave rise to much discussion and it was suggested that a committee of members of the Institut Pasteur and French surgeons should be formed to inquire into his microbe and the therapeutic value of his serum. That committee was not formed but Dr. Doyen requested Professor Metchnikoff to verify the bacteriological side of his researches. Professor Metchnikoff found the microbe present in several cases of tumours and that it presented the characters indicated by Dr. Doyen but he could not state that it was the microbe of cancer, his opinion being that many experiments must first be made. Dr. Doyen, however, was convinced that he had obtained experimentally tumours which resemble malignant tumours in man. He brought to Professor Metchnikoff numerous microscopical preparations obtained from animals in which he had inoculated his organism and which he thought gave a new proof that his microbe was the cause of cancer.

Professor Metchnikoff requested one of his assistants, Dr. Weinberg, to examine these preparations. After a very careful examination Dr. Weinberg came to the conclusion that although the lesions obtained were interesting he could not find in them the true character of a malignant tumour and was convinced that they were purely inflammatory. Dr. Doyen then wished to make a communication before the Académie de Médecine but the committee did not see fit to permit him to do so. He then showed his preparations before the Société Anatomique. It was decided that the members of the Société Anatomique should examine his sections in the laboratory of Professor Cornil and discuss the question at the next meeting. That discussion took place on March 17th, 1905, in the presence of Dr. Doyen and was continued on the 24th. It is not possible here to give a description of all his preparations, one can only say that the members of the Société Anatomique, represented by Professor Cornil, M. Brault and M. Letulle, decided after careful discussion of each section that not one of them could be labeled "malignant tumour." Dr. Weinberg reminded Dr. Doyen that he had come to the same conclusion when he examined the specimens at the Institut Pasteur. He had had occasion to make a bacteriological examination of many tumours and had frequently found the microbe Doyen but thought that it played a rôle in certain secondary inflammations of malignant tumours. As to the agglutinating action of the serum of cancer patients on the microbe Doyen he could not accept that as a new proof of the specificity of the microbe, for it was well known that we can obtain different agglutinins on injecting into the same animal at the same time cultures of different microbes, therefore he could understand that the serum of a cancer patient may be able to agglutinate the "microbe of cancer" (if really it is a parasitic disease) and at the same time the microbe of Doyen. There can be no doubt that Dr. Doyen deserves much praise for the patience and perseverance he has shown in his investigations but unfortunately at present there is no evidence to prove that he has found the microbe of cancer. Professor Metchnikoff, in whose laboratory I have the honour to work,

sums up the situation thus: (1) the microbe Doyen exists; (2) it is probably secondary, as streptococci, &c., are found in tuberculous cavities, and is not the cause of cancer; and (3) the serum obtained by its aid does sometimes ameliorate the condition of cancer patients in the same way that amelioration may sometimes be obtained by injection of sera obtained from other organisms.

I am, Sirs, yours faithfully,

April 3rd, 1905. R. STENHOUSE WILLIAMS, M.B. Edin., &c.

## MEDICINE: ITS PRACTICE AND ITS PUBLIC RELATIONS.

*To the Editors of* THE LANCET.

SIRS,—Referring to your remarks made in Chapter VI. (p. 879) of "Medicine: its Practice and its Public Relations," with reference to the action of the Pharmaceutical Society against members of the medical profession in Scotland for the infringement of the Pharmacy Acts *by their unqualified assistants in pharmacy*, you do not seem to be aware that we appealed to the Privy Council, complaining of the action of the General Medical Council. That petition was sent by the Privy Council to the General Medical Council who recorded it in their minutes (1903 or 1904). The Pharmaceutical Society has not ceased action, as it has prosecuted a number of unqualified assistants of medical practitioners for the sale of poisons and I think in every case has obtained penalties. The General Medical Council, however, has taken no action in these cases. What is the reason of this I do not know.

I am, Sirs, yours faithfully,

JOHN BROWN, M.D., F.F.P.S. Glasg.

Glasgow, April 3rd, 1905.

*To the Editors of* THE LANCET.

SIRS,—Referring to the fifth very able article of your correspondent on "Medicine: its Practice and its Public Relations," I should like to point out, as a hospital reformer of some years' standing, that bare justice has been done only in relation to the hospital conference which was held at St. Martin's Hall in October, 1899. I was, of course, not responsible in any way for the speeches made on that occasion but I was altogether responsible for the various papers read. And I venture to say without any diffidence that the authors of the various papers were men who had had great experience of the subjects they wrote about; and, moreover, although many years have passed since their views were published, yet nothing fresh in any way has been given to the world with regard to the solutions of the many problems that they dealt with individually. I may be allowed to add that some of the recommendations made by the authors of the papers have been adopted by the authorities of the various metropolitan hospital funds. I may be pardoned for recalling to your memory the names of those gentlemen who so materially assisted at the conference by reading papers: Dr. F. J. Smith, Mr. Douglas Dent, Dr. Arnold W. W. Lea, Mr. G. Hawkins-Ambler, Colonel Montefiore, Mr. G. A. Wright, Dr. Bertram M. H. Rogers, and Mr. C. W. Warren.

I am, Sirs, yours faithfully,

Cardiff, March 29th, 1905. T. GARRETT HORDER.

*To the Editors of* THE LANCET.

SIRS,—I am obliged to you for allowing me to see these letters. Some of the names which Mr. Horder enumerates belong to gentlemen honourably known for their work and far be it from me to suggest that they or any other speakers did not know their subject *au fond*. All that I intended to convey was that certain of the speeches did not bear out this view.

I knew, of course, of the action of the Privy Council but not of the continued prosecutions to which Dr. Brown alludes.

I am, Sirs, yours faithfully,

THE AUTHOR OF THE ARTICLES.

## THE RATIONAL TREATMENT OF FRACTURES.

*To the Editors of* THE LANCET.

SIRS,—In THE LANCET of March 4th, p. 601, "Dubitans," in the course of commenting on the method of treating fractures, as strapping, rubbing, and movement, asks me two questions. First, as to whether I should use extension in the case of oblique fracture of the bones of the leg—i.e., the femur, the tibia, and the fibula—I would in reply say that in fractures of the femur I like to use, and have up to now found efficient, the double inclined plane or Liston's long splint with perineal band, according to the position of the fracture, but in either case following out the strapping, rubbing, and movement. As regards the fracture of both bones of the leg the case which I described was oblique in nature and did very well with strapping and Cline splints. I certainly am of opinion that strapping helps to hold the bones in position and checks riding to a great extent. In a bad case of oblique fracture of this kind, if I found Cline splints and strapping were insufficient to keep them in position, I should place the limb, after strapping, on a back splint with side splints and sling it in a Salter's cradle. Personally I seldom try to adjust the position of a bad fracture at once accurately, as it is far better to wait until the inflammatory effusion has settled to some extent and is beginning to be absorbed. Rubbing will hasten this greatly. By delaying the "setting" in this manner for some days the spasmodic contraction of the muscles will have subsided to a great degree. It is quite possible that one might see a very oblique fracture that would get out of position directly a splint is removed. If I were to find a fracture do this in spite of the strapping I should not remove the restraining influences until some union had occurred but were this fracture in a position to allow the joints above and below to be used daily while supporting the fracture with short splints I should certainly make use of some form of splint which would permit the joints to be moved and begin rubbing as soon as there was some degree of union.

The second question is as to whether the generalisation of so-called rational treatment from simple cases of fracture is dangerous when applied indiscriminately elsewhere and is there any other rational treatment in the troublesome cases than bone carpentry by cutting down upon, and securing together, the fragments, as in Mr. W. A. Lane's plan? As to the first half of this question, the term rational treatment was not meant to be dogmatic and if taken in the narrower sense might be dangerous. As regards the bone carpentry I admit that there may be some cases of oblique fracture where, in spite of all the care possible, the result will still be unsatisfactory.

I believe that in these cases Mr. Lane's treatment is the right one but I do not think that this method can be of general use in practice. The operations are not so easy in the most happy circumstances and would be practically impossible to carry out and to keep aseptic in many small houses and cottages, even supposing the patients were willing to allow it. In country districts the patients will solve the problem for one. They are not likely easily to submit to "an operation for a broken bone" as they would term it. You would probably find yourself dismissed in favour of a surgeon who has not expressed any desire to use the knife to mend the leg; and from the surgeon's point of view I think this is an operation which should only be undertaken in aseptic surroundings and patients are loth to leave their homes for hospitals on account of broken limbs. Even among the better classes where the surroundings are suitable I think that there would be an almost insuperable objection on their part to operation on simple fractures. In compound fractures this objection would not be so great. Circumstances alter cases and what might be the rational treatment in one case would be quite unsuitable in the other, and fortunate is the surgeon who can adapt himself to the surroundings of each individual case; but I certainly maintain that the rational treatment of any fracture, where it is possible to use it, is by the method of strapping, rubbing, and movement, as early as possible, consistent with a good result.

I am, Sirs, yours faithfully,

March 17th, 1905. J. STAFFORD MELLISH.

## IF TUBERCULOSIS SHOULD BE CERTIFIED, WHY NOT SYPHILIS?

*To the Editors of* THE LANCET.

SIRS,—I never heard of phthisis causing syphilis but I believe that many thousands of cases of phthisis are caused by syphilis. And considering that there are thousands of cases in our lunatic asylums caused by syphilis and that our hospitals have thousands of cases of heart and kidney

disease, brain disease, blindness, deafness, skin disease, and disease of almost every organ caused by syphilis, would it not be well if we went to the *fons et origo* and formed a national association for the prevention of venereal disease. By so doing I believe that we should enormously decrease the amount of phthisis. I see that at the sixth general meeting of the National Association for the Prevention of Consumption Sir William Broadbent and others urge that public authorities and public money should be used for establishing sanatoriums for consumptives. But is this a wise use to put public money to? Ought not it to be used equally for the prevention and cure of syphilis? For I believe that the sanatorium cure and open-air cure are just as efficient against syphilis as against phthisis and just as necessary. Every syphilitic is a danger or a burden to the State "even unto the third and fourth generation." And he is, if he is not cured, a fertile soil for the tubercle bacillus and its propagation and distribution. Again, why should medical men certify cases of phthisis and not cases of syphilis? Why should chicken-pox and small-pox be certified and not great pox? It seems to me that taking all the speeches at the meeting referred to you might substitute syphilis or venereal disease (for the ravages of gonorrhœa are staggering also) for consumption or tuberculosis and they would be of equal, if not of greater value—e.g., "If the Metropolitan Asylums Board would undertake to deal with syphilis (or venereal disease) which was to a certain degree a contagious disease, they would leave a very distinct impression upon the amount of that disease which existed in London and not merely save life but promote the public health," &c.

I honestly believe that if we could stamp out syphilis and gonorrhœa we should diminish by one half the amount, not only of phthisis and infantile tuberculosis, but of kidney disease, gynæcological disease, bone, eye, ear, skin, brain, spinal cord and, in fact, most diseases and much diminish the amount of cancer. Then why in the world do we not do it?

France has now given us the lead. France, taught by experience and startled to wakefulness by M. Brieux's play and the efforts of *Le Matin*, has formed a "National Association for the Prevention of Syphilis." It will distribute literature and by education will try to prevent the ravages of syphilis caused by ignorance and neglect. Why does not England do the same? I believe that venereal disease has more to do with the physical deterioration of the race and degeneracy than primary tuberculosis has. The majority of the submerged tenth are, according to my experience gained in hospital out-patient departments, syphilitic, many of them hereditary. They are good for nothing and never will be good for anything. Our workhouses and casual wards are half full of them. The army and the navy are gravely (how gravely it is shocking to think) affected. Our seaport towns are rotten. And what do we do to prevent the spread of it and all its attendant evils? Nothing, almost nothing. And why? Because we say we must certify tuberculosis, or scarlet fever, or chicken-pox, or small-pox, but great pox, more deadly than all, No—we let that go as it pleases. And why? Largely because we do not like to talk of disagreeable things; and also there is a curious pseudo-puritanical spirit which will not allow the innocent to be protected with the guilty and shuts its ears and eyes to the cry of millions of sufferers because its curiously perverted "conscience" seems to teach that "pox populi" is "pox Dei." Will our profession not give the lead towards a better state of things, now and soon?

I am, Sirs, yours faithfully,

Cannes. EDWARD H. DOUTY.

## "AMAAS."

*To the Editors of* THE LANCET.

SIRS,—In THE LANCET of May 7th, 1904, p. 1273, appeared a clinical description of a disease called "amaas" occurring in South Africa, said to be allied to, but to differ from, small-pox. The author, Dr. W. E. de Korté, again in your issue of Dec. 24th, 1904, p. 1776, speaks of "amaas" as a distinct disease. He appears to base his differential diagnosis on the possibility of vaccinating persons who have recently suffered from "amaas," that it has a low mortality, that there is no secondary fever, and on the character of the scars and marks which the disease leaves behind it.

I intended last year to criticise Dr. de Korté's paper but pressure of work prevented it. However, I send you a copy of the report of the medical officer of health of the Colony of the Cape of Good Hope for the year 1895 which contains an investigation into the nature of a disease said to be "amaas" which prevailed in and around Graaff Reinet. Dr. de Korté was then practising in Graaff Reinet and it is to be presumed that the disease which he now calls "amaas" is identical with that to which he then gave that name and which proved to be ordinary small-pox.

With regard to the possibility of vaccinating after an attack of small-pox with calf lymph I may state that I myself had small-pox; two or three years after I purposely inoculated myself with small-pox without any effect, yet afterwards while vaccinating calves I accidentally inoculated myself and very typical vaccinia resulted. The existence of "amaas" depends upon a mistaken diagnosis based upon inaccurate clinical observations.

I am, Sirs, yours faithfully,

GEORGE TURNER,
Medical Officer of Health, Transvaal.

Public Health Department, Pretoria, Jan. 30th, 1905.

*** The report for the year 1895, which Dr. Turner sent to us as above mentioned, forms with its appendices a bulky document of 156 printed pages. Dr. Turner was at that time himself the medical officer of health of the Colony of the Cape of Good Hope and the principal or introductory report is naturally signed by him. Under the heading of "Small-pox" he says on p. 14: "This disease, so much dreaded, gave rise to very few deaths during the year 1895. It was, however, prevalent at Kimberley and in some other districts. It was of an exceedingly mild type, attacked the natives chiefly, and was therefore often described as chicken-pox, amaas, &c. The reason why the malady was principally confined to coloured persons was undoubtedly due to the fact that these were much less protected by vaccination than the Europeans. ..... Twice for about a week on each occasion I had an opportunity to see small-pox amongst the natives at Taung and I watched carefully to see if the disease in any respect differed from small-pox as I had seen it in Europe, especially during the great epidemic of 1870–72, but could not discover any essential difference. I had frequently heard the opinion expressed that a disease did prevail amongst natives which closely resembled small-pox but which was not that disorder. I was therefore particularly anxious to meet with cases of this kind and gladly received instructions to proceed to Graaff Reinet, where I was informed that a disease resembling, but not identical with, variola prevailed." The results of Dr. Turner's inquiries at Graaff Reinet are given at length in Appendix II. of the report. It consists of 12 printed pages and, in addition, contains reproductions of photographs of five patients showing the eruption, seven temperature charts, and a plan of a court in Graaff Reinet where some of the patients lived. This appended report is dated "Cape Town, Cape of Good Hope, 19th March, 1896." After eight pages of clinical descriptions of patients Dr. Turner says that the cases designated "amaas" at Graaff Reinet were "unmistakeable discrete small-pox, such as is commonly met with in Europe, Asia, America, and elsewhere." As far as he could discover the diagnosis of "amaas" and its discrimination from small-pox were based upon the following points—namely (1) that the eruption after the scabs have fallen leaves pigmented marks and does not pit; (2) that the eruption appears sooner after the commencement of the prodromata than would be the case in small-pox; (3) that the death-rate has been low; and (4) that "amaas" does not attack Europeans. In discussing these arguments against the identity of "amaas" and small-pox he maintains that they are all untenable.—ED. L.

## A QUESTION OF SITE.

*To the Editors of* THE LANCET.

SIRS,—As the future of the Institute of Medical Sciences becomes more hopeful its practical details acquire an importance which it was formerly unnecessary to give them and to my mind one of the most important things to discuss is whether South Kensington is the fittest place for such an

institute. It may be that the authorities are committed to this site; if so it will be well to realise the disadvantages connected with it in order that they may be, as far as possible, counteracted. I am only able to offer an expert opinion as a teacher of anatomy but from that point of view I feel that the distance of the proposed institute from the clinical centres will be a serious handicap. It is only lately that I have realised how largely the dissecting room of a hospital is used by students before their final examinations in surgery and how usual (and often necessary) it is for candidates preparing for the Primary Fellowship to combine a certain amount of clinical work with that preparation. Then it is undoubtedly an advantage to all concerned that the whole of the teaching should not be in the hands of professional anatomists, that some of the demonstrators should be young physicians and surgeons who can give a certain amount of their time to the dissecting room. Again, the nearness of the anatomical department to a post-mortem room is an advantage which is only fully appreciated when anatomy has to be taught in an institution where no post-mortem room is.

Those of us who have many committees to attend at South Kensington know how much time is wasted in the journey there and back from the centre of London and I feel sure that the proposed institute there will be seriously handicapped in competing with others more favourably placed as well as with those hospitals which elect to keep their anatomical and physiological departments as at present. If the University could extend its agreement with the Royal Colleges and use the Embankment premises for teaching as well as for its examinations, it would, from the point of view of anatomy, be much more convenient. Failing this, is it too much to hope that some influential body will come to the help of London medical education and grant a more central site? If the new institute is so remote that the schools cannot concentrate there conveniently the result will be that yet another centre will enter into competition with those already existing (and more favourably placed) and it will need all its proposed endowment in order to survive.

I am, Sirs, yours faithfully,

St. Thomas's Hospital, March 29th, 1905. F. G. PARSONS.

## TYPHOID FEVER IN LINCOLN.

*To the Editors of* THE LANCET.

SIRS,—In the various papers recently written on attacks of typhoid fever past and present in Lincoln, I have not seen any account of the severe outbreak of typhoid fever that occurred in 1857. In that year I called public attention in the local papers to the sanitary state of Lincoln—there was no main drainage, the sewage ran into cesspools which soaked into the surrounding soil, poisoned the water of the pumps, and caused the most disagreeable smells all over the town. According to the Medical Directory of 1856 the population of Lincoln was 17,536, but the number of cases and the mortality then were proportionately as great as in the present epidemic of typhoid fever of 1904–05. The main drainage was accomplished about 1882; it had an immediate beneficial effect on the health of the inhabitants of the city and the benefit would have been much greater if provision had been made for flushing the sewers. In rainless warm weather, especially if fogs prevail, the sewers become very offensive and the effluvia that escape from the manholes cannot fail to have injurious effects on the inhabitants of the houses situated close by. I think it was an Irish judge who first drew attention to the danger of manholes. He noticed that the people who lived in houses contiguous to a certain manhole in the neighbourhood of his residence were nearly always ill or ailing.

The nose generally gives the warning note of danger, but the mouth is the great open door which admits free trade in all kinds of seeds of epidemics, not always the only one, for sometimes they gain admittance through the back door. I have a sad case of this kind imprinted on my mind. An uncle of a lady who kept a boarding school for young ladies came to pay a visit of a few days to his niece. He was recovering from typhoid fever and in the night was attacked with diarrhœa and the excretions were thrown into the water-closet that was used by the young ladies. In a short time typhoid fever of a most virulent character broke out in the school and five or six of the girls died.

I attributed the outbreak of fever in 1857 to emanations from foul sources, overcrowding of small dwellings, and many other causes. I caught the fever myself and believed it to be the result of a defective water-closet. The Lincoln water did not seem to have been much blamed in the production of the disease at that time, nevertheless I drew attention in one of my letters to the danger of drinking water into which sewage ran and gave as examples that Dr. J. Barry of Cork stated that such of the inhabitants of that city who drink the water of the river Lee, which receives the contents of the sewers, are subject to a most fatal dysentery and fever and that one out of every three affected dies from it and also that the water of the river Seine at Paris often produces fever and dysentery and as a consequence of this suppurative inflammation of the liver. I may mention that the Lincoln water-supply was formerly in the hands of a company. The company took the water that was close at hand, that is, from the Witham and from pools formed by water that ran off the fields. The two made an unhappy "blend" which has not yet been rectified. When the Romans occupied Lincoln doubtless the Witham was here and so were the pools of water but they very wisely did not take their drinking and cooking water from them but went three miles out of the town for it to the springs at Nettleham and conveyed the water to Lindum Colonia through well-made fayence pipes which were laid in beds of strong cement. The great desideratum with Lincoln now is pure water. The corporation is boring for it and it is to be hoped it may get it but I am afraid that in the end it will have to go for good water to the Wolds. In the meantime for drinking water we have to live on the charity of the benevolent of neighbouring towns.—I am, Sirs, yours faithfully,

WILLIAM O'NEILL, M.D. Aberd., M.R.C.P. Lond., &c.

Lincoln, March 14th, 1905.

## SCURVY RICKETS.

*To the Editors of* THE LANCET.

SIRS,—The milk-supply of metropolitan public institutions is rarely beyond reproach. Managing boards usually accept the lowest tender and unless there is some glaring deficiency of cream or some unusually apparent staleness the difficulty of rejecting an unsatisfactory delivery is very great. Practically all milk is railway borne and consequently is much contaminated by dust and other filth. As delivered there are always a perceptible scum of light dust on the surface and a variable layer of coarser particles of dirt at the bottom of the churn. In such circumstances sterilisation of the milk before issuing it to the children is imperative. Some time ago, owing to the occurrence of some slight cases of scurvy rickets, I suspended the sterilisation by heat and tried the effect of formic aldehyde in varying proportions. I observed that some infants could tolerate the formic aldehyde for a time, even to the extent of ten parts per 100,000, whilst others showed undigested curds in their stools even when so low a proportion as one in 100,000 was used. This evidence of increased difficulty of digestion of the curd necessitated a return to the heat sterilisation, with the addition of the juice of an orange or of a portion of a banana daily, and if this addition be regularly given I believe scurvy rickets will not arise. All the cases I have met with have occurred in children who have been fed exclusively on boiled milk.

The first symptom noticed is the evident pain which movement causes the child; examination shows the existence of brawny swelling of the thighs, upper arms, shins, and forearms, these parts being affected in the order above given. Occasionally hæmorrhages occur in other places. I have seen a case in which the first noticed symptom was a pronounced black eye accompanied by considerable proptosis and external squint. A subsequent necropsy revealed the presence of a large hæmorrhage under the periosteum of the orbital plate of the frontal bone. Complete separation of the epiphyses from the shafts of the long bones is of frequent occurrence and post mortem the periosteum is found to be separated from the shaft of the bone by a blood clot varying in extent and thickness. The immediate substitution of an unboiled milk may save the child. I remember a little girl who had the lower epiphysis of both humeri separated and yet survived. Still, the mortality is very heavy. The point to which I desire to draw special attention is the possibility, and even likelihood, that manifestations of this disease may be attributed to violence. The appearances are very similar. The swelling, the possible ecchymosis, the signs of the broken bone, would certainly suggest the application of undue force to the lay mind and might even deceive the medical attendant, especially if accompanied by a tale of ill-treatment. In

wo of my cases the correct diagnosis of the condition alone prevented a charge of cruelty being brought against perfectly innocent persons, and in these days when members of public bodies apparently possess unlimited and unpunishable powers of irresponsible criticism and accusation, and when societies base their claims for support upon the number of convictions obtained by them, it behoves medical men to bear the symptoms of scurvy rickets well in mind when called upon to examine cases of alleged injury to young children.

I am, Sirs, yours faithfully,
F. S. TOOGOOD, M.D. Lond.,
April 3rd, 1905. Medical Superintendent to Lewisham Infirmary.

## PRESSURE STASIS.

*To the Editors of* THE LANCET.

SIRS,—The interesting case of extreme compression narrated in THE LANCET by Dr. R. Lane Joynt reminds me of a similar case which I treated a few years ago. A party of 30 or 40 excursionists were proceeding in a four-horse break from Manchester to Chester to see the "Chester Cup" run for. A wheel came off, the break over-turned, and everybody toppled upon somebody else or upon the ground. Two women came off especially badly. They were taken into lodgings in Chester (the accident had occurred three or four miles away) and I saw them as soon as they arrived. The one, rather stout, 48 years of age, had a comminuted fracture of the middle of the right humerus and a fracture of the left clavicle; but what struck me most was the extraordinary appearance of her eyes, the whites were bright red, the whole of the conjunctivæ of both eyes being suffused with blood. Her face and forehead, ears, neck, and part of her chest were bright red. There was also a small occipital scalp wound and a little blood had been squeezed out of the right ear. Her friend had a broken leg and some bruises. The subsequent progress of the two patients was (happily) uneventful. The ecchymoses, bruises, &c., passed through the usual colour changes, the fractures united, and the patients were able to go home in a fortnight with their fractures in "plaster." They came to see me at intervals and completely recovered. I am, Sirs, yours faithfully,
Chester, April 2nd, 1905. HENRY W. KING.

## THE TREATMENT OF EMPYEMA.

*To the Editors of* THE LANCET.

SIRS,—Daily irrigation as a method of treatment of empyema is an anachronism. I should not have thought that anyone employed it at the present day. Certainly I do not, as Mr. Godlee assumes. The pleura may be washed out at the time of operation with advantage if the pus be fœtid or too thick and curdy to be easily evacuated; but if the pleural cavity be once thoroughly cleansed subsequent washing out is rarely required. The only object I had in my paper in referring to washing out at all was to try to dissipate the fear which still appears to haunt the minds of some operators that it involves great risk of fatal collapse. For this purpose it was necessary to speak of my own experience, which happened to be considerable on that point, for when a student at St. Bartholomew's Hospital and subsequently when resident at the Chest Ho-pital, Victoria-park, frequent washing out was a method of treatment of empyema much in vogue with some of the older physicians. I thus had an opportunity of washing the pleura out and of seeing it done a great many times, probably, as I said, some hundreds of times, but not, as Mr. Godlee makes me say, in some hundreds of cases. I never saw any bad symptoms produced and therefore I consider the risk infinitesimal and one that may be practically disregarded.

To excision of rib my objection is not so much that it adds something to the operation as that it weakens the framework of the chest, especially if a portion of more than one rib be removed. Drainage can often be perfectly provided for without it and therefore I do not consider excision necessary as a routine practice. I quite agree with Mr. Godlee that the drainage-tubes used are often too long, but even a short tube will generally require more shortening before it can be finally removed. As regards the seat of incision which I recommended at the posterior axillary border on the transverse level of the nipple, if the average position of a nipple be taken as the fourth rib or fourth space the incision would be in the seventh or if a little farther forward in the sixth space, but by no possibility in the fourth, as Mr. Godlee says it might.

The use of the probe in exploring the pleural cavity enables us to ascertain the size, the limits, and the relations of the cavity. In the early days after the operation, if the case is doing well, it is not necessary though it gives interesting information. But when an empyema hangs fire because either the drainage is imperfect or the cavity for some other reason does not close, examination with a probe is the only means at our disposal of ascertaining the exact conditions of things within the thorax and often enables the defect to be remedied without recourse to further operative measures. As careful examination with a probe can do no harm I cannot sympathise with Mr. Godlee's objection to it. I do not think, after all, that Mr. Godlee and I differ seriously in our views of the treatment of empyema and certainly not so gravely as he implies. I am, Sirs, yours faithfully,
Wimpole-street, W., April 3rd, 1905. SAMUEL WEST.

## LEGISLATION FOR FEMALE CLERKS.

*To the Editors of* THE LANCET.

SIRS,—Will you kindly grant me a short space in your columns to bring again before the notice of the profession the urgent need for legislating for the protection of the health of the large and increasing number of female clerks employed in London and other centres. The Factory Acts safeguard the interests of women engaged in workshops, but there is absolutely no control over the employers of women engaged in clerical work. Three cases have lately come under my care which I would like to call attention to, as they illustrate the disabilities under which this class of workers suffer. A lady recently consulted me and during the interview she told me that she was engaged as a typist to a well-known solicitor. Ten women are employed by the firm and there was no lavatory accommodation whatever for the women. When they wanted to relieve themselves they went out to a railway station near. I suggested that I should write to her employer on the subject, which was agreed to. I received a very polite note from the gentleman stating that he had not given the subject a thought but promised that the omission would be rectified immediately. In another case a young lady was suffering with a foul ulcerated throat. She told me that she was employed in a newspaper office with two other girls. They worked in a room at the end of a passage with no outside window. Just outside the door, which was constantly being opened and shut, was the men's lavatory, which seems to have been always in a most filthy state. The third case is that of a young woman engaged in a similar occupation whose working hours lasted from 9.30 to 8.30 usually but at certain periods of the year, in all amounting to two months, they were kept until 11 P.M.

If three such cases occur in the experience of one practitioner in a short time, what must be the aggregate amount of suffering of a preventable nature the thousands of women must have to endure who go up to the City every day. I could quote other instances of a similar kind but I consider the above sufficient to call attention to three obvious defects.—I am, Sirs, yours faithfully,
T. E. WHITE, M.D. Durh., D.P.H.
Catford, S.E., April 3rd, 1905.

## SHOCK AND COLLAPSE.

*To the Editors of* THE LANCET.

SIRS,—Mr. C. Powell White in his letter in THE LANCET of April 1st, p. 887, draws attention to my statement that "the blood pressure is maintained within a few degrees of the normal range even under extreme variations in outside pressure" and points out that this is incompatible with the treatment of patients suffering from shock by compressed air. The statement referred to is, of course, only meant to apply to a healthy individual whose vaso-motor system is uninjured. Mr. White has not appreciated the distinction which I drew between the normal physiological condition of the circulation in health and the morbid physiological condition which exists in shock. Directly the vaso-motor system has broken down and become incompetent, as is the case in shock, the statement no longer holds good and the blood pressure tends to follow any variations in outside pressure.

When a patient is suffering from shock increasing the atmospheric pressure will raise the blood pressure. The

cause of the lowered arterial pressure in shock is the increased capacity of the vascular system resulting from loss of vaso-motor control. Increasing the atmospheric pressure will diminish the capacity of the vascular system and so directly raise the blood pressure in the essential part of the circulation—namely, the heart and great vessels and the brain.

I am, Sirs, your faithfully,

April 4th, 1905. P. LOCKHART MUMMERY.

## FREE INCISION IN PLEURITIC EFFUSION.

*To the Editors of* THE LANCET.

SIRS,—In your issue of March 25th I notice that Dr. S. West discourages "free incision" in pleuritic effusion. As I have treated a few cases in this manner with success I would like to express my opinion with a view to encourage this method of treatment. I have employed incision in acute cases, sometimes with a high temperature and pneumonia. The object of the treatment is primarily to relieve the dyspnœa and secondarily to prevent the adhesions which are so frequent after empyema, not to refer to the very large number of cases which go on to tuberculosis. Dr. West says: "The objection to this method of treatment is, of course, that it necessarily leads to empyema." My experience is that it is more probably a preventive of empyema, if the drainage is properly carried out. If done early, within a week or so, there is no fear of adhesions, as Dr. West anticipates. It is supposed to be the relief of tension that cures, as similarly occurs with an obstinate effusion in a joint when incised. Far from being "unjustifiable" as a method of "radical treatment" I think it appeals to anyone on first principles and as the lung expands quickly there is no cavity left to become septic.—I am, Sirs, yours faithfully,

Hampstead, March 28th, 1905. ALBERT WILSON.

## ISOLATION HOSPITALS.

*To the Editors of* THE LANCET.

SIRS,—Allow me to assure Dr. F. Lucas Benham that I sincerely regret having misread his former communication to THE LANCET and that the part of my letter in which I offered him my congratulations on his having "contented himself with a letter to THE LANCET" should have been so badly worded as to have given the impression that I was harbouring an *arrière pensée*. What I intended to convey was that continued association with this movement would have brought him no more satisfaction than it has brought us. As Froude has it, "Men possessed with an idea cannot be reasoned with"—which explains the fact that after 25 years of continuous failure the isolation hospital still exists, but the why and the wherefore of its existence nobody knows.

I am, Sirs, yours faithfully,

Nottingham, April 1st, 1905. EDWD. DEAN MARRIOTT.

## IMMIGRATION AND THE DEATH-RATE.

*To the Editors of* THE LANCET.

SIRS,—In your comments on the Registrar-General's sixty-sixth annual report it is stated that "it is unreasonable to expect that in a country receiving hordes of destitute aliens from all parts of the world the present exceptionally low death-rate will be permanently maintained."[1] It would be interesting to learn what is the writer's conception of a horde. I may say at once that the immigrants do not dwell here in tents, camps, &c. As to numbers, there were in 1902 probably less than 56,000[2] and in 1903 considerably less than in 1902.[3] They are certainly not all destitute. THE LANCET annual returns show that in the districts with the largest number of aliens (Stepney) the death-rate is not the highest in London, neither for all classes nor for children under one year of age.[4] Mr. Charles Booth believes that an influx of foreign Jews, who, as is well known, form the bulk of the immigrants, will be a factor in reducing the death-rate in St George's in the East and Shadwell as it has been in Whitechapel.[5]

I am, Sirs, yours faithfully,

Commercial-road East, April 3rd, 1905. M. D. EDER.

[1] THE LANCET, April 1st, 1905, p. 880.
[2] Statesman's Year-book for 1904, p. 29.
[3] Board of Trade Returns, April, 1904.
[4] THE LANCET, March 12th, 1904, p. 749.
[5] Life and Labours of the People in London, final volume, p. 18.

## THE SCAVENGERS OF NEW YORK.

THE OUTBREAK OF CEREBRO-SPINAL MENINGITIS; THE REMARKABLE INCREASE OF CANCER, ORGANIC HEART DISEASE, AND CHRONIC BRIGHT'S DISEASE.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

So many cases of cerebro-spinal meningitis have recently occurred in New York that the disease has assumed an epidemic form. Its presence has created very great alarm and not a few persons have already sought safety in flight. According to Dr. G. B. Fowler, who was recently commissioner of health of New York, this is a filth disease. In times gone by it used to prevail in prisons and also among the insane of filthy habits who were locked up in asylums that were a sort of prison and where no great care was taken to maintain cleanliness. To-day, however, there is a sanitary code issued by the board of health of the department of health of the city of New York. The corporation has a large budget and quite an army of officials and servants. Indeed, some of these are organised on a military basis. Filth, therefore, should not abound in such a city—at least, not to the extent of causing an epidemic similar to those which prevailed within the asylums and prisons in the days when little or no knowledge of sanitation existed. It must be confessed, however, that the scavenging and the paving of the streets are not what they should be. Though I was but a short time in New York still I came upon a few places where the pavement was in a deplorable condition and noticed about the streets a good deal of garbage which should have been removed. Such experience, however, is too limited to form the basis of an opinion. A few cases of neglect could be found in any town and I am not in a position to say whether what I chanced to see at New York was exceptional or general. On the other hand, at the University Settlement in Eldridge-street, which is on the East side and the most densely populated part of New York, I heard a lecture on this very subject. The lecturer described the measures taken by the late Colonel Waring and how he had insisted that he was determined to clean the streets.

For this purpose the colonel, who was the city commissioner for street cleaning, put his men into uniforms. He endeavoured to make them take a pride in their work and proclaimed what has often been said though not often realised—namely, that the scavenger is one of the most useful and indispensable functionaries of the State. He urged that it was not a disgrace to sweep the streets; the real disgrace was to take money for sweeping and then not to sweep. Having organised his scavenger brigade, given them their uniforms, and drilled them a little, he determined to raise their sense of self-esteem by some striking demonstration. It so happened that at that time there was a fashionable horse show. Consequently he had all the horses in the employ of the street cleansing department carefully groomed and decorated with ribbons. The men were told to put on their best and cleanest uniforms. Colonel Waring, himself in a similar uniform and mounted on a fine charger, rode at the head of the scavenger brigade, conducting them and their horses to the horse show. Here the fashionable and wealthy members of New York society, struck by the originality of the proceeding and realising the importance of the object in view, gave the scavengers an enthusiastic ovation. They had been accustomed to parades of firemen, but, after all, is not the scavenger as useful a worker? Does he not also largely contribute to protect the public against the dangers that especially menace the dwellers in large towns? It was certainly an excellent idea to endeavour to raise the standard of life and self-respect among the scavengers and Colonel Waring very ingeniously discovered a method of achieving this end It is essential for the welfare of the community that scavengers should realise how very important is the work with which they are entrusted and how serious the consequences may be if it is not carefully, punctually, and efficiently performed.

If, as it is maintained, cerebro spinal meningitis is a filth disease, can it be that since the death of Colonel Waring there has been some relapse and that the scavenging work is no longer so well done? Or is it, as the present commissioner says, that there is a great increase of street stalls, street markets, and costermongers' carts? In America all these

itinerant vendors are known under the graphic and generic term of "push-cart" men, and they not only to a large extent fill up the streets but the refuse of what is sold is thrown on the ground and adds to the dirt and untidiness of the thoroughfares. This is particularly objectionable when the refuse consists of vegetable matter. Dr. Darlington, chief of the health department, has given figures showing that there is a higher death-rate than elsewhere in the "push-cart" streets, that is, the thoroughfares where street markets are held. This is attributed to the greater amount of garbage lying about and to the fact that the children have less space to play in, the street which constitutes their principal playground being more crowded and not so clean. A great improvement, however, was effected when asphalt was employed, particularly as care was taken to lay it down in the poorest streets first. The children, therefore, were able to play on a comparatively dry and non-absorbent ground that could easily be washed and scoured with the fire-hose. But, nevertheless, the costermongers' carts and the garbage thrown out of these carts at least superficially soil the streets in spite of the asphalt.

Formerly only old people were allowed to hawk goods in the streets. Now not only are there broken-down old people offering boot-laces to the passers-by but young vigorous folk bring along hand-carts full of boots and shoes to sell. Others sell hosiery and underlinen—in fact, everything and anything is brought into the street and offered for sale. The tendency seems to be to replace shops by an open-air bazaar. Such a transformation renders it much more difficult to keep the streets clean and has a decidedly injurious effect upon health. Then when the frost comes a certain amount of organic matter is, as it were, imprisoned in the ice that forms in the streets. There it may remain for weeks; but when a thaw comes it decomposes very rapidly. As the thaw affects the entire city and as it is not possible to clean simultaneously every part of the city, some mischief may arise before the appearance of the scavengers. Though nothing is really known as to the cause of the present epidemic, suggestions have been made that the condition of the streets, the difficulty of organising efficient scavenging when so many streets have been converted into markets, is a contributory cause. However this may be, it is undoubtedly a fact that while the diseases—mainly the zymotic diseases, which used to be the principal cause of high death-rates—are being gradually eliminated or very materially reduced in prevalence and fatality other complaints are increasing. This is all the more alarming as no satisfactory explanation is forthcoming. To-day there is the serious epidemic of cerebro-spinal meningitis which is said to have caused at New York alone some 700 deaths. But more serious because it is spread over a large number of years is the fact that New York shares with most other centres of population both in America and Europe in the growing prevalence of cancer. The New York board of health, however, is not particularly concerned with this statistical demonstration because, on the whole, the nominal augmentation in the number of deaths may be due to more accurate diagnosis rather than to a real rise in the number of cases of cancer. What is considered even more serious is the remarkable increase of deaths from organic heart disease and chronic Bright's disease.

To deal with cancer first, there were 2608 deaths ascribed to this cause at New York in 1903 and this is equal to a death-rate of 699 per 1,000,000 of the population. In 1902 the proportion was 674 per 1,000,000. But what is more important is that in 1873 the proportion was only 433 per 1,000,000. The increase from 1873 to 1903 is equal to 77 per cent. But it is pointed out in the official reports of the health department that in the old city of New York in 1873 the percentage of deaths from external cancer was 28 and from internal cancer 72 of all deaths from this disease. In 1902 the figures for the borough of Manhattan show that the proportion of external to internal cancer was 16 to 84. In 1873 the deaths from cancer of the breast were 13 per cent. and from cancer of the stomach, liver, and intestines 40 per cent. of all deaths from that disease. In 1903 the more obvious cancer of the breast caused only 9 per cent. of the deaths, while 53 per cent. of the deaths were attributed to cancer of the stomach, the liver, and the intestines, where the presence of cancer is not so easy to detect. Again, in 1873 28 per cent. of deaths from cancer were due to cancer of the female genital organs and in 1903 the percentage was only 16·4. In 1873 the number of males dying from cancer was 33, as compared with 67 deaths of females from this cause, but in 1903 the deaths of males was 40 per cent. and that of females only 60 per cent. of the total, though the numerical ratio of the sexes varied only 1 per cent. The average age at death of both sexes, based upon five-year periods, was 48 years in 1873 and 51·8 years in 1903. The increase of deaths attributed to cancer amounts to an average of 423 deaths per annum and per 1,000,000 of the population during the ten years 1873–1882. During the period 1883–1892 it was 554; during that of 1893–1902 it was 642. But this apparent aggravation is due to the more accurate detection of internal and inaccessible cancers and occurred among males rather than among females. The augmentation is therefore, at least in part, due to more accurate diagnosis and improved certification of death. As for the actual increase, which doubtless has taken place, though it is not as extensive as is generally supposed, the New York department of health seems to be tempted to attribute the cause to the greater consumption of alcohol, tobacco, and meat together with the wider prevalence of syphilis.

In regard to the deaths caused by organic heart disease and by chronic Bright's disease, there are a few more due to the former than to the latter cause. Thus, for instance, there were 615 deaths from the former disease and 534 from the latter disease in 1868, the first year given in the statistics now issued. The important fact is that these figures increased in 1903 to 3129 and 2818 respectively. The augmentation of the population does not suffice to account for this. The death-rate due to both diseases amounted in 1868 to 13·50 per 10,000 inhabitants. The proportion in 1903 was 27·20 per 10,000 inhabitants. There have been some fluctuations in this increase and the last figure given does not represent the maximum. It was in 1870 that the proportion exceeded 15 per 10,000. In 1882 it exceeded 20 per 10,000. In 1891 it went beyond 25 per 10,000 but remained below that figure from 1894 to 1899, varying from 22·38 to 24·53 per 10,000. In 1900 the proportion was 25·32; in 1901 it rose to the maximum of 29·11; in 1902 it began to fall and was 28·11 and, finally, as stated before, there were 27·20 deaths per 10,000 inhabitants attributed to chronic heart disease and chronic Bright's disease in 1903. It will be seen, therefore, that in the course of from 30 to 40 years the deaths due to organic heart disease and chronic Bright's disease have more than doubled. Then we have the apparent, and probably, though to a less extent, real, increase of the prevalence of cancer and finally there is the actual and alarming epidemic of cerebro-spinal meningitis. These are facts and I mention them because they are important facts, not because there is necessarily any co-relation between them.

## BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

### *The Hospitals.*

A FURTHER series of annual reports from the Birmingham hospitals has been published. It includes those of the Ear and Throat Hospital, the Women's Hospital, and the Skin Hospital. The expenses of each of these hospitals have been considerably increased in consequence of building extension which has been undertaken to relieve the great pressure upon the accommodation. The Women's Hospital is in process of being rebuilt on a new site and is expected to be ready for opening some time during the summer. The extension in connexion with the Skin Hospital had largely for its end the better equipment of the operating theatre and the Roentgen ray and Finsen light departments. Great as the pressure is upon the hospitals it would be still greater were it not for such institutions as the Hockley Provident Dispensary—the annual report of which has just been issued—which is self-supporting, it being founded on the principles of self-help, and where the members can obtain medical attention in times of sickness. A complaint alluded to in all the annual reports—a complaint, moreover, which is rapidly becoming a grievance—is that the Birmingham charities are largely used by patients who live outside the area of Birmingham and its suburbs and that from these outlying districts

there is no commensurate contribution. In the report of the Ear and Throat Hospital it was stated that 31·7 per cent. of the in-patients and 26·1 per cent. of the out-patients were from beyond Birmingham. The city in the past has not suffered from the lack of charitable bequests nor have the working classes been behind in contributing, since in addition to maintaining their own convalescent homes in North Wales they have for several years handed over an annual sum of £10,000 to the various hospitals. It is extremely rare, on the other hand, for the hospitals to receive any contribution from the outlying districts the poor inhabitants of which benefit so largely by them.

*The Housing Committee and the Bordesley Green Site.*

Some time ago the housing committee, under Part 3 of the Housing of the Working Classes Act, purchased 17 acres of land at Bordesley Green with the view of building houses for the working classes. The committee later considered it inadvisable to build the houses and determined to let the land to a private builder. An offer has recently been made by a builder who covenants to build upon the site not less than 310 and not more than 340 houses. Each house will consist of a living room, a kitchen, and two bedrooms, one of which can be divided if necessary into two, and there will be a water-closet attached. There will be an area in the centre of the site unbuilt upon for the use and recreation of the residents. Not less than two-thirds of the houses are to be let at 4*s.* 6*d.* a week and the rest at 5*s.* The builder agrees to pay a ground rent of £400 a year and to take the land on a 99 years' lease. The whole scheme will be laid before the council at its next monthly meeting.

*Mentally and Physically Defective Children.*

Mentally and physically defective children formed the subject of an interesting address given at the University a few days ago by Mrs. Hume Pinsent who is a member of the Royal Commission now sitting to consider the education of these children. She particularly emphasised the fact that they were weak in will power and strongly imitative and that, in consequence, if taken from evil surroundings, placed under supervision, and given manual work there was every reason to hope that they would be self-supporting. To effect this result boarding schools were necessary, for in day schools only during school hours were the children protected from evil communications. It was necessary, further, that provision for the education and protection of such children should be compulsory, otherwise there was the absurdity of one township spending money upon them, only to see them at the end of a year removed to a district where such provision was not operative and where they would speedily lose all the advantages which they were in process of gaining. The final problem was to render them when they were grown up self-supporting and to prevent them from aggravating the evil by becoming the parents of a new generation similarly defective. This it was proposed to solve by the institution of colonies where they could work under constant supervision. The large audience which listened to the address showed the interest which many in Birmingham take in the question and gave reason for hope that some serious endeavour would shortly be made to grapple with the subject.

*Worcestershire and the Treatment of Consumption.*

The annual meeting of the Worcestershire Association for the Prevention of Consumption was held a week ago. The general committee, reporting upon the work done during the year at the sanatorium for the open-air treatment of the disease at Knightwick, was able to make the gratifying statement that in 87 per cent. of the cases in the early stages of the disease the mischief was arrested. So satisfactory were the results considered that the committee recommended the purchase of a site and buildings at a cost of £6000, of which some £2000 have already been promised although no general appeal has yet been made.

*The City Analyst's Report.*

From the report by the city analyst to the health committee it is found that the adulteration of food is on the decline. Of the samples analysed last year only 5·3 per cent. were adulterated in other ways than by preservatives. Of the samples of milk examined 4·7 per cent. were adulterated with preservatives only and 6·5 per cent. by the addition of water or the abstraction of fat. These figures are lower than those of any previous year. Preservatives were detected in 37 samples of milk, 12 containing borax or boric acid and 25 containing formic aldehyde. Of the samples of butter 5 per cent. were adulterated in other ways than by preservatives. Perhaps the most interesting information referred to the examination of the water. Samples taken from taps from January to October were of the old supply and contained from 26·6 to 36·8 parts of solid matter per 100,000 parts of water; samples taken in November and December were of the new Welsh supply and contained only 8 parts of solid matter in the same volume of water. The amount of hardness had also decreased from 20 parts to 3·5, and whereas the old supply always contained nitrogen as nitrates the new supply is quite free from such suspicious constituents.

*Local Bequests.*

By the will of Mr. Richard Cadbury the Birmingham General Hospital and the Eye Hospital have each benefited to the extent of £5000, while the Ear and Throat Hospital and the Orthopædic Hospital have each received £2500.—Sir Edward Dolman Scott has bequeathed to the Staffordshire General Infirmary and to the Queen's Hospital, Birmingham, £5000 each.—The residuary interest in his estate which Mr. Best, after directly benefiting certain charities, left to the general purposes committee of the council to be disposed of as it thought fit amounted to £70,000. This sum has now been allocated and in consequence the University receives £20,000, the Birmingham and Midland Institute £3000, and the General and Queen's Hospitals £5000 each.

*The Health of Birmingham.*

For the week ending March 18th the death-rate was 15·9 per 1000, the zymotic death-rate being 1·2. During that week two fresh cases of small-pox were notified; there were five cases in the special wards at the end of the week. For the week ending March 25th the death-rate was 14·3 per 1000, the zymotic death-rate being 1·1. There was one fresh case of small-pox notified during the week.

April 4th.

## LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

*University of Liverpool: Graduation Ceremony.*

AN interesting ceremony took place at the University on April 1st when the degrees of Bachelor of Medicine and Bachelor of Surgery were conferred by Vice-Chancellor Dale upon Mr. J. A. M. Bligh, Mr. D. Elder, Mr. W. D. Higson, Mr. E. F. Hoare, Mr. L. Hutchinson, Mr. J. S. Rowlands, Mr. J. C. Thorburn, Mr. H. W. L. Waller, and Mr. H. F. Woolfenden. The ceremony was witnessed in the Senate room by a number of the graduates' relatives and friends. The candidates were introduced to the Vice-Chancellor by Professor B. Moore, the Dean of the Medical Faculty. In an address to the new graduates the Vice-Chancellor reminded them of the Old Students' Association and of the invaluable services which it had rendered to their corporate life.

*Infirmary for Children and the Finance Committee of the City Council.*

I understand that a deputation from the committee of the Liverpool Infirmary for Children recently waited upon the finance committee of the city council for the purpose of advising the council to grant a sum of money towards the completion of the new hospital, for which there is urgent need. The finance committee could not see its way to accede to the request of the deputation. The supporters of two other Liverpool hospitals at their recent annual meetings have advocated corporate help but so far as I know there is no precedent for such an expenditure.

*The Liverpool Medical Institution.*

A special general meeting of the Liverpool Medical Institution was held on March 23rd to consider proposals made by the council of the society for enlarging the accommodation by the absorption of the resident librarian's house adjoining the building and for the provision of greater facilities for members and associates. The structural alterations will involve an estimated expenditure of £1700, only a third of which can be safely met by funds at the treasurer's disposal. The meeting sanctioned the proposals of the council in so far as the necessary alterations were concerned but adjourned the consideration of the financial proposals to a future special general meeting.

*The Midwives Act, 1902: Registration in Liverpool.*

The Midwives Act, 1902, which came into operation on April 1st, makes the registration of midwives compulsory and to be entitled to registration women must either hold a recognised certificate or have been in the discharge of the calling of a midwife a full year previously to July, 1902. Dr. E. W. Hope, the medical officer of health of Liverpool, has charge of the registration in Liverpool and of the enforcement of the rules which have been made by the Central Midwives Board and approved by the Privy Council. Already a large number of midwives have registered in Liverpool. The city is well supplied with qualified midwives. 70 per cent. have been trained at the Liverpool Lying-in Hospital, whilst others hold certificates from the Obstetrical Society of London. The supervising authority has power to inspect every midwife's case-book, appliances, &c., and, where thought necessary, her place of residence, the object in view being to prevent the spread of puerperal fever.

*The Skeleton of Ambush II.*

The skeleton of Ambush II., the famous race-horse which carried His Majesty's colours to victory in the Grand National steeplechase of 1900, recently presented by King Edward to the University of Liverpool, has just been mounted on an ebony base. The skeleton at present occupies a temporary position in the centre of the dissecting room of the veterinary school where every detail can be readily seen.

*St. Paul's Eye Hospital: Recognition by the University of Liverpool.*

AT the recent annual meeting of the supporters of the above charity it was announced that the hospital is now recognised by the Royal Colleges in London and that it forms an integral part of the United Hospitals Clinical School in connexion with the University of Liverpool. The committee has not yet been able to procure a site on which to erect a new hospital. The managers have approached the corporation several times with reference to certain plots of land but have been unable so far to arrive at an arrangement.

April 4th.

## LEEDS.

(FROM OUR OWN CORRESPONDENT.)

*The Water-supply of Leeds.*

THE rapid growth of the city of Leeds has necessitated certain developments and extensions in connexion with its water-supply, some of which will be immediately commenced. The subject of the "Leeds Waterworks, Old and New" was dealt with in a most interesting manner by Mr. Councillor Armitage, the chairman of the waterworks committee, in a lecture which he delivered before the Leeds branch of the Society for the National Registration of Plumbers. The earliest mention of waterworks in connexion with Leeds was of the date of 1694, when a company was formed for pumping water from the river Aire at a position close to Leeds Bridge. 60 years afterwards this supply was increased and in 1790 the first Act of Parliament was applied for and this Act, amended by another in 1809, was concerned purely with the water from the Aire. In 1837 another Act was applied for as the water of the Aire had become unfit for use. That Act was to impound the water and springs at Adel, Allwoodley, and Harewood in a reservoir at Woodhouse Moor. In 1847 the company obtained powers to pump 2,500,000 gallons per day out of the Wharfe at Arthington. In 1852 the corporation purchased the undertaking from the company for £225,000. In 1862 the amount allowed to be pumped out of the Wharfe was increased to 6,000,000 gallons per day. In 1867 the great Washburn valley scheme was entered upon. Three reservoirs were constructed at Fewston, Swinsty, and Lindley respectively, the last being used as a compensation reservoir. The scheme was finished in 1869 and it was decided to construct the reservoir at Eccup to take the overflow water. The Washburn area was ten and a half miles long and six miles broad. Mr. Armitage then gave an interesting account of the steps taken by the corporation to open out new areas of supply. Extra ground had been secured in the Washburn area to increase the supply and to insure purity, but it was clear that some large scheme was necessary and the Ure valley scheme had been decided upon. The estimated cost of the Ure valley scheme is £2,200,000, including pipe laying. The plans show four reservoirs—viz., those at Colsterdale, Leighton, Carlesmoor, and Laverton—with a capacity of 4,543,000,000 gallons and a daily yield of 15,500,000 gallons. The Colsterdale reservoir will be the largest of the series; it will cover an area of 170 acres and its capacity will be 1,852,000,000 gallons. The daily yield to Leeds will be 7,296,000 gallons and the compensation water will be 3,648,000 gallons. The structure of the embankment was fully discussed by the lecturer. This will be 110 feet in height and will involve the putting together of some 800,000 cubic yards of earth. During the winter months a great deal of discussion went on in the local press and at numerous meetings as to whether on humanitarian as well as economic grounds the work should be done by the corporation which would thus be able to afford employment to those out of work. The matter was fully considered by the corporation which, very wisely as I think, decided that the work should be done by contract. Among the unemployed there may, indeed, be some with the physical strength required for the work of a navvy but as the result of a natural system of selection it is the least skilled and the weakest physically who swell the ranks of the unemployed and certainly the unemployed of a large city are quite unfit for laborious work of this kind. Subject to the approval of the corporation the waterworks committee has accepted the tender of Messrs. R. McAlpine and Co. of Glasgow for the Colsterdale reservoir, which is £297,000. Some conditions attach, however, to the making of the trench. The nature and the direction of the strata it appears are open to doubt, and should these factors prove unfavourable the cost to the corporation may amount to £500,000. The committee has also recommended the appointment of Mr. Hensell, M.I.C.E., as waterworks engineer to the city at a salary of £1000 with staff and office. Accommodation has been provided for about 1000 navvies in the form of a village of huts, with water-supply and drainage system, isolation hospital, surgical hospital, mission room, canteen, and recreation rooms. The corporation is also going to try the experiment of tree-planting in the Washburn valley and a barrack is being erected for the accommodation of about 50 men who will be recruited mainly from the class of the unemployed.

March 4th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*Direct Representation for Ireland on the General Medical Council.*

Dr. Leonard Kidd of Enniskillen has announced that he will be a candidate for the representation of the medical practitioners of Ireland at the election for the General Medical Council in January, 1906, Dr. Kidd holding that the Direct Representative should be a general practitioner. Sir William Thomson has addressed a circular letter to the registered medical practitioners of Ireland referring to the work which he has already done for them on the committees of the Council and to the fact that the Direct Representatives are intended to be the protectors, not of any class in the profession, but of the whole body of the profession as distinguished from the representatives of university and licensing corporations. Apart altogether from anything personal towards the candidates a great many medical men both in Dublin and in the provinces think that the time has come when a provincial Irish practitioner should get a seat on the Council. In Ireland at present there are 2632 medical practitioners and there are seven representatives on the General Medical Council from that country, one each from the Royal College of Physicians, the Royal College of Surgeons, the Apothecaries' Hall, the University of Dublin, and the Royal University of Ireland, one Crown appointment, and one Direct Representative, every one of whom resides within the four walls of Dublin. England and Wales, with 24,351 practitioners, have 17 representatives on the Council and of these only seven reside in London, while ten come from the provinces; Scotland, with 3733 practitioners, has nine representatives, of whom three come from Edinburgh and six from other parts of that country. Surely, following the analogy of England and Scotland, it is hardly fair that in Ireland every representative on the Council should be a Dublin

man and that the provincial districts should be without representation.

*Fatality from Burns in Dublin.*

It has been stated many times that the high mortality in Dublin is largely due to the death of infants. The President of the Royal College of Physicians recently emphasised the fact. Mr. Louis A. Byrne, the city coroner, has just written to the public health committee on the subject, his letter being addressed to Sir Charles Cameron. It is long and contains some important statements. For instance, the number of deaths from burns in 1903 amounted to 39, in the year 1904 to 32, and for the month of January and February in this year 12. The number of burns and scalds treated at Jervis-street Hospital from July 1st, 1904, to March 1st, 1905, was 83. The coroner remarks that this is but a very small proportion of those who have been received in the city hospitals generally. He concludes his letter by strongly recommending the use of a simple and inexpensive screen which should be placed in front of fires in houses containing infants and young children.

*Irish Medical Politics.*

If perfect contentment with things as they are and a belief that this is "the best of best worlds" indicate a state of stagnation in any body or society it certainly does not exist in the medical profession in Ireland at the present time, for never were there such free expression of opinion and such diversity of views. The Irish Medical Association is in a state of ferment over the report of Surgeon-General G. J. H. Evatt and the last number of the journal of that society shows how wide a cleavage there is in that body, and it is expected that when the members meet at their annual conference on June 7th in Killarney there will be a lively and animated discussion. Even among those most opposed to Surgeon-General Evatt's report there is a unanimity that a reconstruction of the executive of that association is required. Then the Leinster branch of the British Medical Association is at this juncture moving for the formation of an Irish committee which shall report to the central council on any matters specially concerning Ireland; and finally, as indicated above, we have looming in the future an interesting contest for the direct representation of the profession on the General Medical Council, in which the provincial general practitioners will apparently make an effort for representation. All these facts indicate that a remarkable awakening is setting in among the members of the medical profession in Ireland.

*The Royal University of Ireland.*

The election of six representatives on the Senate of the Royal University of Ireland will take place next month. There are two medical candidates, Dr. J. Walton Browne and Dr. R. W. Leslie who has been nominated as a candidate in place of Professor T. Sinclair (who does not wish re-election) by the Royal University Graduates' Association.

*Ulster Hospital for Women and Children, Belfast.*

At the annual meeting of the supporters of this hospital held on March 21st it was reported that 261 cases were admitted into the children's wards during the past year, while there were 2261 out-patients, of whom 488 were ophthalmic cases. 82 cases were admitted into the women's wards and there were 553 extern gynæcological cases. 11 women were admitted into the maternity ward and 161 were attended at their homes. The total number of cases afforded relief by the hospital during the year was 3320, an increase of 23 per cent. over the year 1903. The total income was £705 17*s.* 11*d.* and the total expenditure was £950 14*s.*, showing a deficit of £244 16*s.* 1*d.*, equal to about £25 per month. This deficit was met by drawing upon the balance of the Ulidia bazaar proceeds.

*The Mater Infirmorum Hospital, Belfast.*

From the twenty-first annual report of this hospital for the year ending Oct. 31st, 1904, it appears that there were 1563 intern patients, 2204 accident cases, 345 surgical operations, and 21,900 cases treated in the dispensary. The expenditure for the past year was £5178 13*s.*, leaving a balance due to the bank of £125 7*s.* 5*d.* Additional funds are urgently needed for the ordinary outlay of the hospital and for the development of the convalescent home.

*Belfast Ophthalmic Institution.*

At the annual meeting of the supporters of this institution held on March 22nd it was stated in the medical report that 2219 extern and 159 intern cases had been treated during the past year. The operations numbered 100. Financially there is a balance due to the bank of £96 5*s.* 7*d.* It is to be regretted that a sum of £50 appealed for in the last report for the proper furnishing of the operating theatre has not been forthcoming. The honorary secretary has again offered that provided the committee raises £100 during the year he will give £50 for pressing alterations in the hospital. During the last four years £440 have been spent in necessary improvements and changes in the building.

*Health of Belfast.*

At the monthly meeting of the city corporation held on April 3rd it was reported that for the past six weeks there had been no fresh cases of small-pox and that for the past month the death-rate had been 23·8 per 1000. Scarlet fever and simple continued fever are less prevalent, as well as diphtheria and erysipelas, whilst cases of enteric fever are on the increase. The corporation rescinded a by-law passed by the markets committee that "all meat killed outside the city and brought into the city for sale shall, before being sold or exposed for sale, be brought, together with the head, heart, lungs, pleura, liver, spleen, kidneys, intestines, and peritoneum of the same beast, into the market appointed by the council for inspection by one of their inspectors of provisions between the hours of 8 A.M. and 10 A.M., and shall not be sold or exposed for sale until after same has been inspected and passed by him as fit for human food." The council also decided to complete the works for the drainage of the asylum and infectious diseases hospital at Purdysburn, a plan which necessitates the sewage being brought through the city and which has been much objected to by the inhabitants.

April 4th.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*Thyroid Grafting.*

AT the meeting of the Academy of Medicine held on March 21st M. Lannelongue read, on behalf of M. Gauthier and M. Kummer, a communication relative to a child, aged three years, on whom they had grafted a fragment of thyroid gland taken from a girl afflicted with goitre. The case was interesting as regards cretinism and its modern treatment. Cretinism is due to functional insufficiency of the thyroid gland and both cretins and myxœdematous patients have been successfully treated by giving them the thyroid gland of animals by the mouth. Other observers have thought it better to graft a piece of thyroid gland under the skin and if the graft "takes" it grows and assumes the functions of the normal gland. In the same way ovarian tissue has been grafted on women whose ovaries had been removed and who suffered from disturbances owing to the absence of these structures. M. Lannelongue tried thyroid grafting for the first time in 1890, the graft being taken from a sheep. Later other observers tried the treatment and Christiani of Geneva showed that a graft from a human being was most likely to meet with success. In the case under the care of M. Gauthier and M. Kummer the graft "took" successfully and ten months after the operation the myxœdematous condition of the patient was much improved.

*The Purification of Drinking Waters.*

The city of Paris is about to open a competition for the ascertaining of the best method applicable to a town supply of purifying water for drinking purposes. Those desirous of competing must send to the Prefecture of the Seine all documents, such as specifications, memoranda, and the like, which will give a complete explanation of the system in question, the results which may be expected from its adoption, the expense of installing the plant, and its method of working for the supply of a definite quantity. Prizes are to be allotted which will vary in amount between 1000 francs and 3000 francs, the total sum to be given in prizes not to exceed 6000 francs.

*Trephining for Fracture of the Skull.*

At the meeting of the Surgical Society held on March 22nd M. Demoulin read a paper for M. Lenormand concerning the case of a man, aged 35 years, on whom the latter had operated for the following conditions. The patient received a violent blow from a bar on the right temporo-parietal

region. He received a first dressing and was able to walk for a distance of 200 metres. During the night he vomited and the following morning he was taken to the hospital. On being examined 36 hours after the accident he was found to have an enormous hæmatoma of the injured region, with depression of the bone, a raised temperature, some incoördination of the movements of the left arm, and explosive phonation (*bredouillement de la parole*). Operation was decided upon, the blood clot was removed, and the underlying bone was found broken into fragments which were removed. There was no blood within the skull but the dura mater was torn for about four centimetres. This was sutured and the external wound was drained. Next day the facial paralysis had disappeared and a few days later the patient was well. Despite the favourable outcome of this case M. Demoulin considered that in view of possible infection of the tissues underlying the dura mater it would have been preferable to enlarge the opening in that membrane and to examine the arachnoid cavity. The dura mater should then have been partly sutured, a small drain being left in. This course M. Demoulin proposed to follow in a similar case.

*Demonstrations by Medical Students.*

The medical students of Paris considering themselves aggrieved by the severity of M. Gariel, professor of physics, in his capacity of examiner, organised demonstrations against him, both during his lectures and outside his house. The police were called in and the chief of the municipal police struck a student with a cane. This incident gave rise to great excitement in the Quartier Latin and on March 20th 1500 students demanded the dismissal of the chief of the municipal police. That official appealed to the prefect of police, M. Lepine, who in the presence of the students blamed the action of the chief of the municipal police and promised to send to the corporate association of the students of medicine a letter putting this opinion on record, which letter was sent directly on M. Lepine's return to the prefecture. The students dispersed but M. Debove, dean of the faculty of medicine, has suspended M. Gariel for the time being from lecturing.

April 3rd.

## CANADA.

(FROM OUR OWN CORRESPONDENT.)

*Annual Report of the Montreal General Hospital.*

THE eighty-second annual meeting of the corporation and board of governors of the Montreal General Hospital took place during the last week of February, when it was announced that the annual income for 1904 had fallen off to the extent of $7605, which has caused the board of management no little anxiety. The income for 1904 amounted to $83,589 and the expenditure to $95,508.88. The board of management expressed the hope that the citizens of Montreal would come to its aid, so that there would be no necessity to limit the number of patients per month in the institution, as the board of management had to do in 1869, with a deficit of half of the present shortage. During the past year $25,000 have been added to the endowment fund, which brings the total amount of that fund up to $75,000. Dr. F. G. Finley, the secretary, presented the annual medical report, which showed that the total number of patients passed through the wards was 3144 as against 3066 for 1903. There remained in the hospital 201 at the end of 1904. Those discharged during the year numbered 2893 and there were 251 deaths. The percentage of mortality was 7·98, or 4·9 exclusive of deaths occurring within three days of admission. The average number per diem in the wards was 189·1 and the average number of days spent in the wards by each patient was 22·05. The aggregate number of days of all patients in the hospital was 69,212, while the average cost per patient daily was $1.38, as compared with $1.56 for 1903. In the outdoor departments there were 1973 males and 1171 females treated and 38,922 consultations. The ambulance responded to 1511 calls. Dr. Finlay was re-elected secretary. The staff elected for the ensuing year was as follows:—Physicians: Dr. W. A. Molson, Dr. A. D. Blackader, Dr. Finley, and Dr. H. A. Lafleur. Surgeons: Dr. F. J Shepherd, Dr. George E. Armstrong, Dr. J. A. Hutchison, and Dr. J. M. Elder. Assistant physicians: Dr. F. W. Campbell, Dr. G. Gordon Campbell, and Dr. S. Ridley McKenzie. Assistant surgeons: Dr. Kenneth Cameron, Dr. Charles W. Wilson, and Dr. J. Anderson Springle. Specialists: diseases of the eye and ear, Dr. John J. Gardner. Assistant in diseases of the eye and ear, Dr. J. W. Stirling. Gynæcologist: Dr. F. A. L. Lockhart. Assistant gynæcologist: Dr. John D. Cameron. Laryngologist: Dr. D. H. Hamilton. Assistant laryngologist: Dr. George K. Grimmer. Neurologist: Dr. David A. Shirres.

*Tuberculosis discussed in the Canadian House of Commons.*

A motion was a short time ago presented to the Canadian House of Commons by one of the hon. members thereof, the substance of which was to the effect that the time was opportune when the Canadian Government should materially assist in the work of checking the ravages of the "great white plague." The motion met with the hearty and unanimous sympathy of the entire House and will be sure to do a great deal of good in fighting this disease. One good outcome of the resolution will be that it is not altogether improbable that the Government will appoint a Royal Commission to investigate the extent of tuberculosis in Canada, which Commission will, no doubt, also be empowered to make representations as to the best means of combating the spread of the disease. The annual meeting of the Canadian Association for the Prevention of Tuberculosis took place at Ottawa, when Professor J. George Adami of McGill University, Montreal, who has recently been admitted to the Fellowship of the Royal Society, delivered an address on Adaptation in Consumption.

*Canadian Medical Men and North-West Autonomy.*

The Prime Minister, Sir Wilfrid Laurier, has introduced a Bill into the Federal House of Commons to provide for the creation of two provinces out of what have heretofore been denominated the North-West Territories; and as a result some of the medical profession in the other provinces of Canada feel exercised as to whether the matter of registration to practise there is going to be left in the hands of the respective new legislatures. In fact, some of the local medical societies of Canada have had the matter under discussion and in certain quarters there prevails the opinion that the question of registration in the two new provinces should, for a few years at any rate, be left open, so that those practitioners who are registered in the older provinces could have a chance to register there should they so desire. The argument has been advanced that as the Government of Canada purchased this vast country from the Hudson's Bay Company the physicians of Canada, those of the older provinces which then constituted the Dominion of Canada, have a right in it as well as those of the balance of the community. The *Dominion Medical Monthly*, which circulates largely throughout Manitoba, the Territories, and the West, advises that the medical men of the two new provinces have the right to legislate as they see fit until such times as Dominion registration becomes the medical law of Canada.

*Amalgamation of McGill Medical Faculty and Bishop's Medical College.*

Following the example set by the medical faculty of the University of Toronto and the medical faculty of Trinity University, Toronto, McGill medical faculty and the medical faculty of Bishop's College University of Montreal are talking of amalgamation and there appears to be every likelihood that the amalgamation will take place. Meetings of representatives of the two faculties have been held but nothing has been given out for publication of a tangible character. Consolidation, however, is not far off. McGill University probably feels that it must do something to keep pace with its great rival Toronto. Now, of course, in the matter of students the University of Toronto leads by many and is continuously gathering in students from quarters which a few years ago were looked upon as McGill University's special preserves. The union is a desirable one.

Toronto, March 9th.

## NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

*Council on Pharmacy and Chemistry.*

THE American Medical Association has, as I said in my letter a fortnight ago, established a Council of Pharmacy and Chemistry the purpose of which is to examine into the composition and status of the various medicinal preparations which are offered to physicians and

which are not included in the United States Pharmacopœia or in other standard text-books or formularies. These preparations will include the synthetic chemical compounds as well as the so-called proprietaries and pharmaceutical compounds put out under trade-mark names. Rules governing the matter have been established and preparations which conform to the standard fixed by the rules will be incorporated in a book entitled "New and Non-official Remedies" and issued by the American Medical Association. The acceptance of an article will be based on a careful and unprejudiced examination of the accessible information from all sources and in compliance with the adopted rules. An acceptance is not to be interpreted as an endorsement, neither is omission from the list to be construed in every case as condemning an article, for it may mean that the necessary information has not been obtained. The council does not pass judgment on the therapeutic value but on the ethical status only; neither does it presume to dictate what preparations shall be prescribed but supplies necessary and desirable information concerning those which it considers unobjectionable. The council believes that there are many articles at present not recognised by the Pharmacopœia which comply with the required standard and do not need any farther investigation. Some of the more important rules adopted by the council are as follows:—

1. No article will be admitted unless its active medicinal ingredients and the amount of such ingredients in a given quantity of the article are furnished for publication.
2. Information must be furnished as to tests for identity, purity, and strength, and if a synthetic compound the rational formula.
3. No article that is advertised to the public will be admitted except disinfectants, cosmetics, foods, and mineral waters.
4. No article will be admitted whose label, package, or circular contains the names of diseases in the treatment of which the article is indicated.

There are ten rules of this kind. The members comprise the leading pharmacists of the country.

*Tent Treatment for Consumption.*

The Hudson County (New Jersey) board of freeholders, according to the New York *Sun*, has decided to establish a hospital for pauper tuberculous patients. Large tents will be used and the out-of-door treatment will be followed as closely as possible. The county authorities have had their attention called to the necessity of separating consumptives from the other inmates of the almshouse. It was at first proposed to establish a trolley car colony for those suffering from pulmonary tuberculosis and the president of the public service corporation offered to place a quantity of abandoned trolley cars at the disposal of the almshouse authorities. They, however, concluded that the tents would be cheaper and more serviceable than the old cars.

*Sanatorium for Inoperable Cancer.*

A sanatorium at Fairhaven, near New York, for the treatment of cases of inoperable cancer will soon be incorporated. The need of such an institution is testified to by all New York physicians and the only obstacle standing in the way is lack of funds for its first year. The Fairhaven sanatorium will be used solely for inoperable cases which are not admitted to the wards of general hospitals. The medical profession is particularly anxious that an institution of this nature should be established, for the reason that it would afford an opportunity for an exhaustive study of the disease. A medical board has been decided upon to aid in the management of the institution, consisting, among others, of Dr. William B. Coley, Dr. B. F. Curtis, Dr. George F. Shrady, Dr. Austin Flint, jun., Dr. A. Blake, and Dr. Edward B. Cragin.

*Yellow Fever on the Isthmus of Panama.*

Yellow fever is somewhat prevalent on the Isthmus of Panama and in consequence of this fact General Davis, Governor of the Panama Canal zone, has notified the Secretary of War that he can dispense with nearly all the marines on the isthmus. Accordingly the Secretary of the Navy has been called upon to order all the marines north except about 100.

*Cerebro-spinal Meningitis in New York and Philadelphia and in other American Towns.*

Cerebro-spinal meningitis has been remarkably prevalent in New York during the past few weeks. In Philadelphia, too, there has been a large number of cases of the same disease. The last great epidemic of this malady in New York up to this year took place in 1872. From Jan. 1st to Nov. 1st at that time there were reported to the health department a total of 990 cases, of which 761, or nearly 77 per cent., proved fatal. During February of this year 149 deaths occurred in this city from cerebro-spinal meningitis and the disease shows little signs of abating. Dr. Craig of Philadelphia was recently attacked by the disease and died before he could be isolated. On March 18th cerebro-spinal meningitis was discovered in the Philadelphia Hospital and Almshouse and the greater part of that institution has been placed under strict quarantine. So serious is the situation thought to be in New York that an appropriation has been made by the city board of estimate to allow for the appointment of a commission to investigate and to endeavour to discover a preventive of cerebro-spinal meningitis. Dr. Darlington, president of the New York health department, has appointed the following commission: Dr. William Polk, chairman, dean of Cowell Medical College; Dr. Walter B. James, professor in the New York College of Physicians and Surgeons; Dr. William P. Northrup, professor in children's diseases in Bellevue Hospital and at the University of New York; Dr. Simon Flexner, head of the Rockefeller Institute; Dr. Joshua M. van Cott, pathologist at the Long Island College; Dr. E. K. Dunham, pathologist of Carnegie Laboratory; and Dr. William K. Draper, visiting physician at the Bellevue and Minturn Hospitals. The commission will not undertake any active work but physicians who have cases of cerebro-spinal meningitis will be requested to make experiments and tests and send them to the commission, the members of which will consider them and endeavour to devise means of preventing the disease or of alleviating its spread. As in other epidemics most of the victims are children, especially those from one to five years of age, and the majority of them are drawn from the lower classes. Cerebro-spinal meningitis is supposed by some to follow severe winters but the history of the disease does not altogether bear out this view. In Yonkers, a town situated about 20 miles from New York, 39 deaths from the disease have occurred since the blizzard of Jan. 25th.

March 27th.

# Medical News.

VICTORIA UNIVERSITY OF MANCHESTER.—Degrees were conferred upon the following candidates in March:—

*Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.).*—George Duncan Dawson*, Eric Maurice Wilkins*, Frank Leigh Boag, Archibald Cambell, Catherine Louisa Corbett, Joshua Bower Dalton, Ronald Leslie Ferguson, Henry Edward Fox, Wilson Harold Hey, Richard Woodward Higson, Ernest Hulme, Thomas William Lonsdale, George Gray Parkin, James Smalley, Henry Thorp, David Walker, and John Stirling Young.

* Second-class honours.

UNIVERSITY OF LEEDS.—The following candidates have passed in the several examinations which have just been held:—

*Second M.B., Ch.B.*—W. L. Dibb and W. D. Hamilton.

*Final M.B., Ch.B.*—Part I.: E. R. Flint, F. E. Kendall, and W. O. McKane. Part II.: F. Bailey, C. N. Smith, A. B. S. Todd, and M. G. L. Walker.

In conferring the degrees on those who had passed Part II. the Vice-Chancellor remarked on the appropriateness of the first degrees in the University, other than honorary degrees, being conferred in medicine and in the buildings of the medical school, which was the oldest department of the University.

UNIVERSITY OF GLASGOW.—The following have passed the first professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (B., Botany; Z., Zoology; P., Physics; and C., Chemistry):—

David Rutherford Adams (Z.), John Allan (B.,* Z.,* P.,* C.*), Andrew Clark Anderson (Z., C.), James George Anderson (Z., C.), William Anderson (Z., C.), William Hunter Stirling Armstrong (P., C.), James Currie Auchencloss (C.), David Barbour (Z., C.), Arthur Munby Bayne (Z.), Emile Augustine Cameron Beard (B., Z.), Charles Stewart Black (Z.), John Blakely (B., P., C.), Douglas Morris Borland (Z.), Charles Brash (B., P.), Morris William Broudy (B., Z., P., C.*), Alexander Hogg Brown (B., Z., C.), Carl Joseph Barrett Buchheim (B., Z.), John Adam Gib Burton (Z., P., C.), John Allan Munro Cameron (Z.,* P.*), Andrew Hood Clark (Z., C.), James Lang Cochrane (Z.), James Cook Coalburn (B., Z.), Rutherford Cramb (P.), Donald Downie (B., Z.), Charles Duguid (Z.,* C.), Donald Fisher (Z., C.), Thomas Scoular Fleming (Z.), George Fletcher, M.A. (Z., C.), Robert Dunlop Black Frew (P., C.), James Brunton Galbraith (B., P.), Robert Gale (Z.), William Ernest Gemmell (Z.), David Gibson (P.), Alexander Gordon Gilchrist (Z., C.), Robert Dunlop Goldie (Z., C.), George Stevenson Gordon (Z.),

Edward O'Driscoll Graham (Z.), Joseph Graham (B., Z., P., C.), John Granger (Z., C.), Kenneth Charles Gordon Gray (Z., C.), Albert William Gregorson (B.), George Haddow (Z., P.), John M'Lean Hendry (P., C.), Bentley Moore Hunter (Z., C.), James Walker Jones (Z., C.), John Parlane Kinloch (Z., P.), Thomas Joseph Kirk (B., C.), David Neilson Knox (Z., C.*), John Lang (C.), Alexander Leishman (Z., C.), William Thomson Lindsay (Z., C.), George Smith Livingston (C.), William M'Adam, M.A. (Z.,* C.*), James Macallan (B., Z., P.), William Charles Macartney (Z., P.), Frank Cromble Macaulay (C.), Robert M'Carlie (Z., C.), William M'Connell (Z., C.), Donald M'Dougall (C.), Donald M'Intyre (B.), Robert Buchanan Forbes M'Kail (Z., C.), William Maxwell M'Kie (B., P., C.), Robert Hugh M'Killop (B.), Alexander M'Kinnon (Z.), Donald Mackinnon (B., P., C.), John James Mackintosh (P., C.), Murdoch Hugh M'Leod (B., Z.), John William M'Nee (Z.,* C.), John Hart M'Nicol (Z., C.), Murdo MacPhail (P.), Allan M'Pherson (B., C.), Murdo M'Kenzie MacRae (B., P.), Thomas Marlin (Z., C.), John Park Mathie (C.*), Archibald Mitchell (B.), Hyacinth Bernard Wenceslaus Morgan (Z., C.), John M'Intosh Morgan (B.), John Mowat (P., C.), James Muir (B.), Findlay Murchie (B.), Charles Sutherland M'Kay Murison (P.), Frederick Lewis Napier (Z.), William Niccol (Z., C.), Robert Charles Robertson (Z.), Hugh George Robinson (Z., C.), Alfred Roemmele (Z., C.), William Wilson Rorke (Z.,* C.), William Rutherford (Z., C.), Neil Campbell Scott (B., Z., P.,* C.), William Wilkie Scott (P.,* C.), James Johnston Sinclair (Z., P.,* C.), James Stewart Somerville (Z., P.*), Richmond Steel (Z.), Alexander Stewart (Z., P.*), Arthur Ford Stewart (Z., C.), Donald Stewart (P., C.), William Ballantine Stewart (B.), Robert Wilson Sutherland (Z., C.), David Campbell Suttie (Z.,* C.), Robert Sweet (Z.*), Archibald Taylor (Z., C.), Duncan Macnab Taylor (Z.), Walter Telfer (B., Z.), Aidan Gordon Wemyss Thomson (Z.), James Lachlan Ure (Z.,* P.*), Charles Herrmann Wagner (B., Z., P.), William Samuel Waterhouse (C.), Tom Paul Watson (P.), James Brown Whitfield (Z., C.), William Crowley Whittingham (Z., C.), John Alexander Wilson (Z., C.), William Mitchell Turner Wilson (C.), John Youngson Wood (Z., C.), David Yellowlees (Z., C.), and Douglas Young (Z.,* C.).

*Women.*—Christina Barrowman (P., C.), Margaret Baird Sproul Darroch (C.), Mary Cochran Mitchell (C.), Margaret Muir (C.), Jessie Deans Rankin (P.*), Margaret Rason Robertson (P.,* C.), Olive Robertson (P.), and Margaret Elizabeth Rutherfurd (C.)

The following have passed the second professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (A., anatomy; P., physiology; and M., materia medica and therapeutics):—

Wallace Wright Adamson (A., P.*), Alexander Anderson (A., P.), Andrew Hamilton Arnott (A.), David Arthur (A., P.), Herbert Bertram (A., P., M.), Robert Inglis Binning (A., P.), William Brown, M.A. (A., P.), Murdo Buchanan (A.), James Cairncross (A., P.), Thomas Hay Campbell (A., P., M.*), John Paterson Carmichael (A.), John Humphrey James Victor Coats (A., P.), Alexander Johnston Couper (A., P.), James Robert Craig (A., P., M.*), John Craig Crawford (A.), Charles Adolphus Crichlow (A., P., M.), John Alexander Doctor (A., P.), Richard John Driscoll (A.), James Dunbar (M.), Donald Duncan (A., P., M.), William Hunter Duncan (P., M.), Allan Dunsmuir (A., P.), Leonard John Dunstone A., P.,* M.), William Marley Elliott (A., P., M.), Archibald Fairley (A., P.), William Miller Fairlie (M.), Thomas Forsyth (P., M.), George Muir Fraser (P., M.), Samuel Nicol Galbraith (A., P.), Berkley Gale (A., P., M.), Henry Maxwell Granger (A., P., M.), John Vincent Grant (P., M.), Thomas Purdie Grant (A., P.), James Dow Gray (P., M.), William Cooper Gunn (A., P.,* M.), Thomas Harkin (P., M.), John Mitchell Henderson (P.), Archibald Hogg (A., P., M.), Andrew James Hutton (A., P.,* M.), Percy James Kelly (P.), Walter Herman Kiep (A.,* P.*), James Towers Kirkland (P., M.), William Leitch (A., P.), George Ligertwood (M.), Ernest Bowman Macaulay (P., M.), Thomas McCrisick, M.A., B.Sc. (M.), Coll Macdonald (A., P.), James M'Donald (A., P.), John Robert M'Gilvray (P., M.), Robert M'Inroy (A., P., M.), William Anderson M'Kellar (M.), Murdo Duncan Mackenzie (M.), Thomas Cooper Mackenzie (M.), Allison David MacLachlan (A., P.), Donald Cameron MacLachlan (P., M.), Arthur Norman Roy M'Neill (A., P., M.), John M'Vittie (A., P., M.), Isa Carswell Marshall (A., P.), James Hogg Martin (A.,* P.), William Spence Melville (A., P.), Allen Frederick Miller (P., M.), John Wilson Miller (A., P.), Robert Stewart Miller (M.), William Miller (M.), Hugh Morton (A., P.*), Robert Charles Muir (P., M.), Patrick O'Brien (A., P., M.), John Oswald (M.), Isaac Papiermeister (A., P., M.), Donald Renton (A., P., M.), Murdock Mann Rodger (M.), Alexander Scott (A., P., M.), George Waugh Scott (A., P., M.), John Smith, M.A., (A., M.), John Macgregor Smith (A.), John Steedman (A., P., M.), Campbell Kay Stevenson (A., P.), William Stevenson (M.), John Stewart, M.A. (P.,* M.), John Torrance Weir Stewart (M.), Matthew John Stewart (A., P.,* M.*), Lawrence Storey (A., P.), John Anderson Struthers (A., P., M.), John Martin Taylor (P.), Robert Scott Taylor (A., P.), Hugh Johnstone Thomson (A., P.*), Robert Todd (M.), Martin Turnbull (M.), John Morris Walker (P., M.), George Wallace (P.), Hugh Ferguson Watson (M.), William Barrie Watson (A., P.,* M.), Thomas Macnight Watt (A., P.), Frank Ritchie Wilson (A., M.*), Hugh Mundie Wilson (A., P., M.), Samuel Wilson, M.A. (A., P., M.), Thomas Winning, M.A. (A., M.), Garabed Yeghia Yardumian (A., P., M.), and Matthew Young (A.,* P.*).

*Women.*—Martha Maclean Buchan (P.), Ella Smith Hill, M.A. (P.), Annie Rennie Hird (A., M.), Janet Annie Macvea (M.), Florence Mann (A., P.), Vera Dagmar Reis (A.), and Jane Isabel Robertson, M.A. (A., P.).

Thomas R. A. A. G. Crawford has passed the second professional examination (anatomy and physiology) for the degrees of Bachelor of Medicine and Master in Surgery (M.B., C.M.).

The following have passed the third professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (P., pathology; and M., medical jurisprudence and public health):—

James Montgomery Anderson (P., M.), Thomas Barbour, B.Sc. (P., M.), Charles Burns (M.*), William Rome Cammock (P.,* M.), William Archibald Campbell (P., M.), Donald Livingstone Carmichael (P.), Henry Howard Christie (P.), John Sawers Clark, M.A. (P.), Thomas Goodall Copestake (P., M.), James Coutts (P., M.), Andrew Donaldson Cowan (P., M.), Thomas Lawson Craig (P., M.), Arthur Muir Crawford (P.), Weir Burns Cunningham (P.), Harold Windley Dempster (P.), Allan Campbell Douglas (P., M.), James Richan Drever, M.A. (P., M.), Ernest Milne Eaton (P.), John Ferguson (P.), Edward John Fitzgerald (P.), Thomas Henderson Forrest (P.), William Gilbert (P.), William Gilfilan (P.,* M.*), Arnold Harris Gray (P., M.), Robert Neil Guthrie (P., M.), John Hammond (M.), William Towers Hardie (M.), Saul Hyman Harris (M.), Robert M'Cowan Hill (P.), Lawrence Hislop (M.), John Keys (P., M.), Alexander M'Call (P., M.), James M'Farlane (P., M.), William Ferguson Mackenzie (P.), William Macleod (P.), Allister Argyle Campbell M'Neill (P., M.), Charles James Colquhoun Macquarie (P.), William Hislop Manson, M.A. (P., M.), Robert Marshall (P., M.*), John Millier (P., M.), Peter Mitchell, M.A. (P.*), Hugh Walker Moir (P., M.), Patrick Joseph O'Hare (P.), James Hogg Paul (P., M.), Arthur Geoghegan Paxton (P., M.), John Reid (M.), Frederick Gordon Robertson (P., M.), William James Rutherfurd (P., M.), John Samson (P.), Alfred Cecil Sharp (P.,* M.*), James Charles Donaldson Simpson (P.), Robert Alexander Slater (P., M.), William Smellie (P., M.), Thomas Baillie Smith (P.*), James Stevenson (P., M.), John Stevenson (P., M.), Arthur Anderson Stewart (P.), David Laurence Tate (P., M.), Charles Samson Thomson (P.), James Kennedy Welsh (P., M.), David John Williams (P.), George Haswell Wilson (P., M.), and Moses Youdelevitz (P.).

*Women.*—Rose Isobel Hudson (M.), Edith Oversby (P., M.), Agnes Picken, M.A. (P., M.*), Margaret Baillie Taylor (M.), and Christina Gibson Thomlinson (P.).

Robert Stewart M'Kim, M.A., has passed the third professional examination (regional anatomy, materia medica and pharmacy, and pathology*) for the degrees of Bachelor of Medicine and Master in Surgery (M.B., C.M.).

* Passed with distinction in the subjects indicated.

TRINITY COLLEGE, DUBLIN.—At examinations for the diploma in public health held in Hilary term the following candidates were successful:—

*Part I.*—Robert J. Fleming and Douglas S. B. Thomson.
*Part II.*—Thomas F. Griffin and Douglas S. B. Thomson.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Professor Rudolf Renvers, Director of the Medical Department of the Moabit Hospital and surgeon-general in the Prussian army, has been ennobled. Dr. Renvers attended the late Empress Frederick for many years. The following *privat-docenten* have been granted the title of Professor: Dr. Ferdinand Blumenthal, assistant to Professor Leyden in the First Medical Clinic; Dr. de la Camp, assistant in the Second Medical Clinic; Dr. Adolf Magnus Levy, formerly assistant to Professor Naunyn in the Strasburg Medical Clinic; and Dr. Walter Stoeckel, who has charge of the Gynæcological Institute of the Charité under Professor Bumm.—*Brussels:* Dr. Gallemaerts has been appointed Professor of Ophthalmology and Director of the Eye Clinic.—*Budapest:* Dr. S. Beck has been recognised as *privat-docent* of the Dermatology of Children.—*Cologne (Academy of Practical Medicine):* The chair of Pathological Anatomy has been offered to, and accepted by, Dr. Leonhard Jores of Brunswick.—*Florence:* Dr. A. Perassi of Turin has been recognised as *privat-docent* of Surgery and Operative Medicine.—*Heidelberg:* Dr. Peckert has been recognised as *privat-docent* of Odontology.—*Munich:* Dr. Erich Meyer has been recognised as *privat-docent* of Internal Medicine.—*Naples:* Dr. Antonio Iovane has been recognised as *privat-docent* of Pædiatry.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following is the list of prizes awarded for the winter session, 1904–05:—Descriptive Anatomy: Junior: G. C. Sneyd, first prize (£2) and medal; and R. Adams, second prize (£1) and certificate. Senior: H. W. White, first prize (£2) and medal; and J. Murray, second prize (£1) and certificate. Practical Anatomy: First year: Miss I. M. Clarke, first prize (£2) and medal; and C. Greer, second prize (£1) and certificate. Second year: G. S. Levis, first prize (£2) and medal; and G. W. Stanley, second prize (£1) and certificate. Practice of Medicine: L. Lucas, first prize (£2) and medal; and J. Prendiville, second prize (£1) and certificate. Surgery: L. Lucas, first prize (£2) and medal; and C. H. Wilson, second prize (£1) and certificate. Midwifery: J. Prendiville, first prize (£2) and medal; and G. M. Loughnan, second prize (£1) and certificate. Physiology: A. E. S. Martin, first prize (£2) and medal; and G. S. Levis, second prize (£1) and certificate. Chemistry: R. H. F. Taaffe, first prize (£2) and medal; and R. Adams and Miss I. M. Clarke (equal), second prize (£1) and certificate. Pathology: G. F. Shepherd, first prize (£2) and medal; and C. J. Hare, second prize (£1) and certificate. Physics: R. Adams, first prize

(£2) and medal; and Miss I. M. Clarke, second prize (£1) and certificate.—The lectures and practical courses of the summer session commenced on Monday, April 3rd.

THE congratulatory dinner to Dr. C. Owen Fowler, who was recently acquitted of foul and baseless charges brought against him in the divorce court, will be held on Thursday, May 4th, at 8 o'clock, at the Greyhound Hotel, Croydon. Tickets, exclusive of wine, 5s. each, may be obtained from Mr. C. M. Fegen at the Town Hall, Croydon.

ROYAL INFIRMARY, LEEDS.—The governors of this institution have, on the recommendation of the board, passed rules to prevent any honorary officer appointed under the 1884 rules from holding office beyond the age of 65 years and to prevent any honorary officer to be hereafter made a member of the staff from holding office beyond the age of 60 years, the 20 years' limit of service being also retained. The board also recommended that every honorary assistant physician or surgeon should be obliged to retire after ten years' service and to submit himself for election as honorary physician or surgeon with charge of out-patients and that the succession of the honorary physician or surgeon with charge of out-patients to the post of full physician or surgeon should be by seniority only and that honorary assistant physicians or surgeons should, after five years' service, automatically succeed to the charge of a limited number of beds in the infirmary. It may be pointed out that when a member of the full honorary staff has completed his term of office—that is to say, a term of 20 years—or in the case of anyone who may be elected in the future either a term of 20 years or such term until he attains the age of 60 years, he retains as honorary consulting physician or surgeon the right to the use of six beds.

NEW HOSPITAL FOR SKIN DISEASES, MANCHESTER.—The new building for the Manchester and Salford Hospital for Skin Diseases in Quay-street is now nearly completed. The site is adjoining the old hospital at the corner of Byrom-street and Quay-street. It has only been possible to proceed with about two-thirds of the new hospital at present, i.e., the central administrative block and the right wing, with wards, yards, and large waiting rooms for out-patients. When the new buildings are ready for occupation the old house will be pulled down and on its site the left wing will be built. The new hospital will contain 28 beds and the out-patients' room will seat 200 patients. There will be an operating theatre and mortuary and the usual appliances of a hospital. It is estimated that the total cost will be more than £38,000, of which £32,000 have been raised. Manchester soon followed London in the use of Finsen's treatment. The Queen, when Princess of Wales, presented the first set of Finsen's instruments to the London Hospital and takes, as is well known, much interest in the "light" treatment of skin diseases, and the committee is hoping that she will "lend her presence to the opening of the new hospital." Last year there were more than 57,000 attendances, 34,494 of which were by ordinary patients and 22,665 by "light" patients. They come from a very wide area. Bolton and Oldham each sent over 2300, Bury sent 1100, Stockport nearly 1000, while about 2500 were from Rochdale, Macclesfield, Burnley, Crewe, Warrington, Blackburn, and Northwich. During the year patients came from 250 towns and villages. This is mentioned in order to call attention to the great burden laid on the city charities by an outside population, thoroughly appreciative of the benefits to be derived from them but unfortunately not equally mindful of the fact that privileges involve duties and that the districts receiving benefits from medical charities should help in their support more liberally than many of them do at present. There was a deficiency last year of £270.

COAL SMOKE ABATEMENT SOCIETY.—At the Haymarket Theatre, London, W., on March 30th the Duke of Fife presided over the annual general meeting of the above society. The report stated that during the year a marked increase of interest in, and sympathy with, the object of the society had been shown. A supplementary report of the Meteorological Council on London fogs had been issued and its recognition of the society's work and its insistence that smoke was the main cause of those fogs which were bad enough to interfere with river traffic had encouraged the society to request the port sanitary authority to receive a deputation on the subject and that authority, which was showing great activity and interest in the matter, had readily consented. The help which the society received from public bodies generally was very satisfactory but the borough of West Ham provided a serious instance of official neglect. Since May, 1901, when the society began its observations there, 911 reports of serious emissions of black smoke within the area had been forwarded to the local authority, yet no effective steps of any kind had been taken to abate the evil. Every resource had been exhausted by the society to induce the Local Government Board to intervene, but notwithstanding the precedent of Brentford it refused to move in the matter. From Jan. 1st to Dec. 31st, 1904, the society's inspector reported 1550 observations of smoke pollution which led to the detection of 988 cases of nuisance, and upon those observations 949 complaints were forwarded to the various local authorities within the metropolitan area. In opening the proceedings the Duke of Fife congratulated the society on the work that it had done but complained that the society did not advertise itself enough. Until a few weeks ago he himself was unaware of its existence. On the motion of Dr. H. A. Des Vœux (the secretary) the report was adopted. The meeting terminated with votes of thanks to Mr. Cyril Maude, Mr. Frederick Harrison, and the chairman.

THE METROPOLITAN ASYLUMS BOARD AND THE TREATMENT OF CONSUMPTION.—The much-discussed question as to whether the Metropolitan Asylums Board should be the authority for dealing with the consumptive cases in the metropolis has been raised again by the metropolitan branch of the Incorporated Society of Medical Officers of Health, which has asked the Board to receive a deputation on the subject. At a meeting of the Board on April 1st a letter was read from the society, stating that the question of the urgent need that existed at the present time for the provision of sanatoriums for metropolitan consumptives had been under discussion, and in view of the urgency of the matter it was decided to organise an influential deputation to wait upon the Metropolitan Asylums Board for the purpose of representing the desirability of the Board undertaking the duty of sanatorium authority for the metropolis at the earliest possible date. In coming to that decision the society was mainly influenced by the fact that the Metropolitan Asylums Board, by reason of its practical experience in regard to the provision of hospitals and the treatment of the infectious sick, was eminently qualified for the discharge of the important duty of dealing with metropolitan consumptives, a duty the effective performance of which could not fail to be attended with great advantages in the interests of public health. The letter further stated that the deputation would be composed of representatives from various public bodies, including the Royal College of Surgeons of England, the Royal College of Physicians of London, the National Association for the Prevention of Consumption and other Forms of Tuberculosis, the Royal Institute of Public Health, the National Health Society, and the Royal Sanitary Institute. The Board decided to receive the deputation at its meeting on Saturday, April 15th.

DINNER TO DR. F. T. ROBERTS.—On March 29th Dr. F. T. Roberts was entertained to dinner at the Hôtel Dieudonné by his past and present house physicians at University College Hospital. The chair was taken by Dr. F. W. Mott, F.R.S., who was supported by about 30 former residents, including Mr. Charles Stonham, Mr. Percy Flemming, Dr. Walter W. H. Tate, Dr. W. T. Cocking (Sheffield), Dr. W. Mitchell Stevens (Cardiff), Dr. Bertram L. Abrahams, Dr. W. H. B. Stoddart, Dr. Charles Bolton, and Dr. D. N. Nabarro. Letters and telegrams were read from old pupils in India, Italy, and the provinces who had been prevented from attending. Dr. Roberts's health was proposed by the Chairman who referred to the fact that the master whom they were met to honour had been for 35 years, clinically speaking, one of the pillars of University College Hospital, and said that if he had not laid the bricks to the new building which was about to be opened he had at least cemented them with his brains. A time rule was about to sever Dr. Roberts's active connexion with the staff but he was still a young man both mentally and physically, and all who had ever worked under him hoped that he might for many years be spared to help them in consultation. Mr. Stonham also spoke to the toast and attributed much of his progress in surgery to the cultivation of his powers of observation to which he was incited by Dr. Roberts. He referred also with

high appreciation to the standard of character which Dr. Roberts upheld and lived up to, so that all who experienced his kindness and straightforwardness were ever after the better for it. Dr. Roberts, who was accorded a most enthusiastic reception, gave a short history of his career. He stated that no fewer than 16 of his old house physicians were now on the staffs of general hospitals; to his residents and clinical clerks he owed much of the happiness which he had experienced during his long connexion with University College Hospital. Personally he hoped that he had never said an unkind word or done an unkind deed to anyone. He looked forward to the vacancy which his resignation would cause being filled by one of his former house physicians and he announced that far from giving up work he proposed, in addition to continuing his practice, to devote more time to writing than he had of late years been able to spare. He concluded by toasting the organisers of the dinner. Dr. Mott and Dr. Abrahams responded. During the evening songs were contributed by Dr. Roberts himself, Dr. Mott, Dr. Tate, Dr. Banham, and Dr. Stoddart. An album, which it is hoped will contain signed photographs of all his old house physicians, is in preparation and will be presented to Dr. Roberts when complete.

DONATIONS AND BEQUESTS.—By the will of Mr. Henry Allen of Bolney, Sussex, £1000 are bequeathed to St. Mark's Hospital, £500 to the London Fever Hospital, £300 to St. Mary's Hospital, £300 to the Brompton Hospital for Cancer, and £100 to the Dorking Cottage Hospital.—The late Mr. Edward Crossley of Halifax has left £1000 to the Royal Halifax Infirmary and £500 to the Royal Isle of Wight Hospital.—The Goldsmiths' Company has contributed a special grant of £200 towards the debt of £3000 incurred last year in maintaining the patients at the Royal National Hospital for Consumption at Ventnor.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Wilhelm Schulek, late professor of ophthalmology in the University of Budapest, at the age of 62 years.—Dr. Paul Garnier, chief medical officer of the Police Infirmary, Paris.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### *Amendment of Infant Life Protection Act.*

A BILL to amend the Infant Life Protection Act, 1897, has been introduced by Mr. SPEAR and has the support of Mr. DUKE, Mr. SCHWANN, Mr. LINDSAY HOGG, Mr. MELVILLE, Sir JOHN KENNAWAY, Mr. MILDMAY, Mr. ALLEN, Sir JAMES FERGUSSON, and Mr. RUNCIMAN. The following memorandum explains its scope. By the Infant Life Protection Act, 1897, a person receiving for hire or reward more than one infant under five years of age for the purpose of nursing or maintaining such infants apart from their parents for longer than 48 hours or receiving an infant under two years of age, to bring up in consideration of a sum of money not exceeding £20 paid down, is obliged to give notice thereof within 48 hours to the local authority, as defined in such Act. Such local authority is obliged to appoint inspectors to inspect such infants. Failure to give such notice renders the offender liable in the first-mentioned case to a fine of not less than £5 or to imprisonment for not more than six months, and in the second-mentioned case to only forfeiture of the amount received. If any infant, as aforesaid, is kept in any house or premises which are so unfit or overcrowded as to endanger his health, or is retained or received by any person who by reason of negligence, ignorance, or other cause is so unfit as to endanger the child's health, the local authority may order the removal of the infant to the workhouse or a place of safety until he can be restored to his relatives or guardians or otherwise lawfully disposed of. The object of this Bill is to extend the provisions of the Act to cases where only one child is taken in to be nursed or maintained and to any child received in consideration of a sum of money paid down, whatever the amount may be; to raise to seven years the age limit of children within the Act; to render any person failing to notify the reception of an infant adopted in consideration of a lump sum payment to fine or imprisonment as above mentioned, as well as to forfeiture of the amount received; to make it clear that the inspection of children within the Act shall extend up to their reaching seven years or earlier removal by the local authority; to enable the local authority to remove an infant kept by a person who is unfit by reason of character or otherwise to have his care and maintenance or who is in a house or premises unsuitable for the purpose, although such person or premises are not so unfit as to endanger the child's health; and to require notice to be given of all changes of residence of a person having the care or custody of children within the Act under penalty of imprisonment or fine.

### *Vaccination Bills.*

Reference has already been made in THE LANCET to the two Vaccination Bills introduced by Mr. HENRY BROADHURST. The texts have now been issued to Members. In the first Bill the two operative clauses are as follow: "1. From and after the passing of this Act the compulsory vaccination of children shall be abolished throughout the United Kingdom. 2. Henceforth it shall not be lawful to take proceedings for procuring the vaccination of any child or for punishing any parent or other person for not complying with any order for the vaccination of a child or with any statutory requirements for the vaccination of children." The second measure is somewhat more elaborate. The second clause provides that "from and after the passing of this Act any parent may, on registering the birth of a child within the period limited by law and on payment of a fee of 1s., declare his or her conscientious objection to having the child vaccinated. The registrar of births and deaths shall thereupon make a written memorandum of the said conscientious objection, such memorandum to contain the names and address of the parent and the dates of the birth of the child and of the registration thereof. Where printed forms have been supplied to the registrar the memorandum shall be constituted by filling up the necessary details. In any case the registrar shall make three copies of the memorandum, one of such copies to be delivered to the parent making the declaration, a second copy to be retained by the registrar subject to any special or general instructions which may be issued by the Registrar-General, and a third copy to be transmitted to the vaccination officer along with the list of births, which includes that of the child in respect of whom the declaration is made. The local registrar of births and deaths shall be entitled to retain for his own use any fees paid under this section." In the third clause it is laid down that after making such a declaration neither the parent who made it nor any person having the custody of the child in respect of whom the declaration has been made shall be liable to any proceedings in respect of the non-vaccination of, or for procuring the vaccination of, the child. It is not proposed that the measure should apply to either Scotland or Ireland.

### *The Accounts of Medical Councils.*

The accounts for 1904 of the General Medical Council and branch councils and of the Dental Registration Fund were laid upon the table of the House of Commons this week. This is, of course, an annual formality.

### *The Sale of Butter Bill.*

The Government Bill to amend the law with regard to the sale of butter has now been presented and read a first time. When it will be read a second time is a question which the President of the Board of Agriculture himself might have difficulty in answering. In the meantime its progress is blocked by Mr. MACDONA, Sir JOHN ROLLESTON, and Mr. MOSS.

### *The Registration of Nurses.*

A select committee has been appointed on the initiative of the Government to consider the expediency of providing for the registration of nurses. It consists of Mr. ROBERT AMBROSE, Major KENNETH BALFOUR, Mr. CHARLES DOUGLAS, Mr. CHARLES HOBHOUSE, Dr. C. F. HUTCHINSON, Mr. MOUNT, Lord MORPETH, Mr. PIERPOINT, Mr. TENNANT, Sir JOHN STIRLING-MAXWELL, and Sir JOHN BATTY TUKE. The Bill on the subject which was introduced some weeks ago by a private Member has met an opponent in Mr. HARRY LAWSON.

### *The London Hospitals and Rating.*

Mr. HAYES FISHER has prepared a Bill to provide for the exemption of London hospitals from local rates.

### *Experiments upon Dogs.*

Dr. HUTCHINSON has given notice of his intention to move the rejection of the Dogs (Protection) Bill.

### *Medical Officers of Health and Inspectors.*

Another direction in which Dr. HUTCHINSON is exerting himself is in connexion with the qualification and tenure of office of medical officers and inspectors. He has brought in a Bill on the subject.

### *The Opposition to the Pharmacy Bill.*

In THE LANCET of April 1st it was stated that four Members had put down blocking motions against the Pharmacy Bill. Since then the opposition has been strengthened by the addition of the name of Mr. ALBAN GIBBS.

### *The Sale of Whisky Bill.*

Major JAMESON and Mr. SAMUEL YOUNG have determined to do all they can to stay the progress of Sir HERBERT MAXWELL'S Sale of Whisky Bill. Both have notified their intention to move the rejection of the measure on second reading.

### *Amendment of the Lunacy Act.*

On April 5th Sir JOHN BATTY TUKE introduced a Bill to authorise the London County Council to provide receiving houses for the reception of persons mentally afflicted or alleged to be of unsound mind and to authorise the detention of such persons in such houses and for other purposes connected therewith.

## HOUSE OF COMMONS.

### WEDNESDAY, MARCH 29TH.

*Medical Officer for Long Island.*

Mr. WEIR asked the Lord Advocate whether the Secretary for Scotland had yet received a report from the Lewis district committee relative to the appointment of a medical officer of health for the Long Island; and in the event of effect being given to the suggestion whether arrangements would be made for the new officer to be responsible to the Local Government Board directly and not to the medical officer of health of the county.—The LORD ADVOCATE said: The answer to the first part of the question is in the negative. With regard to the second part, I have nothing to add to the reply I gave to the honourable Member on March 14th.

*The Residence of an Irish Medical Officer.*

Mr. HEMPHILL asked the Chief Secretary for Ireland whether his attention had been called to a letter of Mr. John McGlinchy, dated March 6th, sending to the Local Government Board a petition signed by 220 ratepayers in the Castlederg and Killeter No. 2 dispensary district of Castlederg union, North Tyrone, relative to the place of residence of the medical officer, and complaining that his residence was on the bounds of the district, which imposed on many of the destitute poor when requiring medical aid the necessity of travelling up to 12 miles in all weathers for the purpose of obtaining it; and, if so, whether he would take the necessary steps to obviate this and to insure that the medical officer might take up his abode in a central position in his district which would be reasonably accessible to all the poor inhabitants who were entitled to medical aid.—Mr. LONG answered: The petition did not allege that any hardship to the sick poor had resulted from the position of the medical officer's residence. The officer in question has complied with the terms of his appointment by residing within his district and the Board sees no reason for interfering in the matter upon the facts at present before it.

*The Prime Minister and Vaccination.*

Mr. WEIR asked the First Lord of the Treasury whether, seeing that candidates for the public service were not allowed to take up appointments unless they had been vaccinated and that this regulation penalised candidates who had a conscientious objection to vaccination, he would take such steps as might be necessary to enable such candidates to obtain exemption from the rule enforcing vaccination.—Mr. BALFOUR said: I cannot quite understand the use of the word "conscientious" in the question. I do not see how anybody can conscientiously object to being vaccinated.—Mr. WEIR: Cannot the right honourable gentleman understand that I may have a conscience and in my conscience I may object?—Mr. BALFOUR: I can understand an objection to being vaccinated, just as I can understand objection to sleeping in an insanitary room; but the objection is not a conscientious one, it has nothing to do with conscience.—Mr. WEIR added that he would take an opportunity of referring to the subject and showing that it might be a case of conscience.

### THURSDAY, MARCH 30TH.

*An Admiralty Appointment.*

Mr. CONOR O'KELLY asked the Secretary to the Admiralty whether he would state the grounds on which the application of Mr. P. J. McHale, medical officer of Belmullet district, for the appointment of surgeon to the Admiralty in that place was rejected, seeing that for 50 years the position was held by Mr. McHale's predecessors as local medical officer; why, contrary to invariable practice, a medical man living in another part of the country was appointed to the vacancy; and whether he would also state the fees now being paid to this medical man and the fees paid annually for the previous ten years; the number of coastguards to be attended; and whether, before appointing the present surgeon, the Admiralty made any effort to have the work done for less than what it was now paying.—Mr. PRETYMAN replied: The Admiralty did not consider that Mr. McHale was the most suitable gentleman for the post and it has never been the practice to appoint a man simply because his predecessor held the appointment of surgeon and agent. The present holder of the appointment is paid 10*s.* a visit. Previously the ordinary surgeon and agent's fees of 2*s.* 6*d.* per visit were allowed. It is not possible to state the precise amount paid in fees annually during the previous ten years without an elaborate investigation of records which would involve considerable clerical labour and time. The number of coastguards to be attended at the five stations under the surgeon and agent's charge is 30. The reply to the last part of the question is in the negative.

*The Plague in India.*

Mr. HERBERT ROBERTS asked the Secretary of State for India whether, in connexion with the scientific expedition to be sent out to India to investigate the origin and causes of plague, the coöperation of those in the areas affected possessing a knowledge of the difficulties of the problem from an Indian standpoint would be sought; and whether he would consider the desirability of adding to the committee an Indian member with special experience of plague.—Mr. BRODRICK said: There seems to be some misunderstanding as to the object and the scope of the inquiry. The administrative aspects of plague were exhaustively dealt with by Sir Thomas Fraser's Commission of 1898-99 and the practical difficulties of combating the disease are familiar to the Indian Government and its officers. The present investigation will be confined to purely scientific problems in the hope that if these are solved advance will be made in the practical treatment of the disease. The composition of the expedition has been settled on the advice of the two scientific societies which have undertaken to supervise the inquiry, and I do not propose to add another investigator to those already selected. The expedition will work in the plague affected areas and will naturally avail itself of local knowledge and coöperation in respect of matters within the scope of the inquiry.

### MONDAY, APRIL 3RD.

*The Conscientious Objector Again.*

Mr. WEIR asked the President of the Local Government Board whether in view of the fact that magistrates throughout the country place different constructions on the term conscientious objection, as defined in the Vaccination Act, 1898, cases having recently occurred in which a man who had been granted a certificate of exemption for one child had been refused a certificate for another, although he had in each instance raised precisely the same conscientious objection to vaccination, he would consider the expediency of so amending the Act as to remove the difficulty experienced by magistrates.—Mr. GERALD BALFOUR said: I believe that there has been some divergency of practice amongst magistrates in this matter but, as I think the honourable Member is aware, the Lord Chief Justice made some observations at the Birmingham assizes in July last with a view to a more uniform administration of the law on the subject. In order to bring these observations under the notice of the magistrates throughout the country my right honourable friend the Home Secretary embodied them in a circular which he has issued to clerks of justices and I trust that the result of this action will be to secure greater uniformity in the practice of magistrates under the enactment in question. It does not appear to me to be necessary to amend the law on the subject.

*Starving School Children.*

Sir JOHN GORST asked the President of the Local Government Board whether it was not the duty of a relieving officer, in case a teacher informed him that a child under such teacher's care was destitute of necessary food, to inquire into the case, and if the relieving officer found the statement to be correct to give the necessary relief; whether the Local Government Board did not, in 1899, issue to relieving officers extracts from the general orders issued by the Board and its predecessors relating to the duties of such officers; whether such extracts contained any information, and, if so, what, as to their duties with regard to children destitute of necessary food on whose behalf teachers made application for relief; and if they did not contain such information whether he would either cause the circular containing such to be issued or indicate in what book accessible to relieving officers it could be found.—Mr. GERALD BALFOUR answered: The orders provide that it shall be the duty of a relieving officer to receive all applications for relief made to him within his district or relating to any parish within his district and forthwith to examine into the circumstances of every case by visiting the home and making all necessary inquiries and to report the result of such inquiries to the guardians at their next ordinary meeting. The orders also provide that it shall be his duty in every case of sudden or urgent necessity to afford such relief to the destitute person as may be requisite, provided that the same be not given in money. It would be incumbent on a relieving officer to act in accordance with these requirements if application were made to him by a teacher for relief to a child under the teacher's care who was destitute of necessary food. The extracts from the orders issued to relieving officers in 1899 contained the provisions to which I have alluded, but the orders do not refer specifically to cases of the kind mentioned in the question. The Secretary of the Board of Education and I have been in communication in regard to such cases and I am now considering whether any further steps should be taken in connexion with them and whether a circular should be issued on the subject.

Dr. MACNAMARA asked the First Lord of the Treasury whether his attention had been called to the Bill introduced by the honourable Member for the Barnard Castle division designed to empower local education authorities to make provision out of the funds at their disposal for the feeding of hungry children and to empower them also, where it might seem desirable, to recover the cost from the parents and guardians of children so fed; and whether, having regard to the unanimous recommendations of the Royal Commission on Physical Training (Scotland), 1903, and of the Committee on Physical Deterioration (1904) he would grant facilities this session for the further progress of this measure.—Mr. BALFOUR said: As the honourable Member is aware, a committee has been appointed to examine into the facts of this question and I do not think that pending the report of that committee I can make any statement on the subject.—Sir JOHN GORST: Is it not a fact that the committee appointed by the Board of Education is specially precluded from considering any scheme which would cast a charge on the public funds?—Mr. BALFOUR: The main object of the committee is to inquire into the facts and it is, among other things, a real knowledge of the facts that we require before dealing with a subject which is of itself of a difficult character and touches very many thorny problems on all sides.—Dr. MACNAMARA: Can the right honourable gentleman hold out any prospect that this committee will report before the close of the present session?—Mr. BALFOUR: No, Sir, I cannot make any promise on the subject. It does not rest with me.

*An Irish Admiralty Appointment.*

Mr. CONOR O'KELLY asked the Secretary to the Admiralty whether he would state the professional qualifications of the surgeon to the Admiralty at Belmullet; what previous experience in the practice of his profession he had, and where, before his appointment; the reasons which caused the Admiralty to consider the appointment of Mr. A. F. Stuidert more suitable than that of Mr. P. J. McHale; the total sum in fees received by Mr. Studdert during his first 12 months as surgeon; and the total sum in fees received by Mr. M. S. Lavan in his last 12 months in that position.—Mr. PRETYMAN replied: The professional qualifications of the Admiralty surgeon and agent at Belmullet are Lic. Lic. Midwif. R. Coll. Phys. Ireland; Lic. Lic. Midwif. R. Coll. Surg. Ireland. He had had previous experience at High Wycombe and Sheffield and was recommended by the local divisional officer, after careful inquiry, as being the most desirable candidate. The total sum in fees received by Mr. Studdert during his first 12 months as surgeon and agent was £178 and the total sum in fees received by Mr. Lavan in his last 12 months in that position was £240 2*s.* 6*d.*

*The Irish Constabulary and Medical Attendance.*

Mr. SLOAN asked the Chief Secretary for Ireland whether he would state how many times members of the Royal Irish Constabulary in O District, Belfast, were obliged to call in medical men other than those appointed for the purpose; whether they had to bear the expense of the treatment received; and, if so, whether he would direct inquiry to be made into the matter.—Mr. LONG said: During the past three years 27 members of the force in this district called in, at their own expense, medical men other than the police medical attendant. The inspector-general's attention has already been called to this matter and he is inquiring into it.

*Return of Small-pox Outbreaks.*

Sir JOHN TUKE asked the President of the Local Government Board whether he would be willing to lay before the House a return of the places in which cases of small-pox had occurred during the past 12

months, giving the total number of cases occurring in each place in which that number had reached or exceeded 100.—Mr. GERALD BALFOUR said: I am willing to give a return on this subject and I will communicate with my honourable friend as to its form.

Captain JESSEL asked the President of the Local Government Board whether he would grant a return showing the cost to the ratepayers of each outbreak of small-pox in urban districts and municipal boroughs during the past 12 months where the total number of cases had exceeded 100 in number.—Mr. GERALD BALFOUR said: I have not the information desired but I will endeavour to ascertain the amount of the expenditure incurred by the councils of municipal boroughs and urban districts in consequence of the occurrence of cases of small-pox in them during the past 12 months, where the number of cases has exceeded 100. I would suggest that the particulars, if it is found practicable to obtain them, should be included in the proposed return referred to in my reply to the question asked by my honourable friend the Member for the Universities of Edinburgh and St. Andrews.

*Fever at Malta Naval Hospital.*

Sir JOHN COLOMB asked the Secretary to the Admiralty whether patients occupying the old wing of the Naval Hospital at Malta for surgical treatment had, while there or soon afterwards, developed fever.—Mr. PRETYMAN said: Patients while in hospital for surgical treatment or soon after have developed "fever," but the number is small. During 1904 there were 74 cases for operation, and of these three developed "fever."

Sir JOHN COLOMB asked the Civil Lord of the Admiralty when the inner surface of the walls of soft stone of the old wing of the Naval Hospital at Malta was last treated by any process of sanitary purification; and what was the nature of that process.—Mr. ARTHUR LEE replied: The whole of the walls and passages, &c., in the old portion of the hospital have been scraped and coated with a special gloss enamel paint, forming an impervious and washable surface. The soft stone floors have been removed and replaced by terazzo paving. The work was commenced in 1899 and completed in 1902.

*Vaccination Fees in Ireland.*

Mr. SLOAN asked the Chief Secretary for Ireland whether he could say what had been the cost to Ireland and Scotland respectively for vaccination fees since the year 1845.—Mr. LONG replied: The total amounts of fees paid in Ireland to March 31st, 1904, was £381,643. I have no information as to the amount of fees paid in Scotland.

*The Analysis of Irish Butter.*

Mr. O'SHAUGHNESSY asked the Chief Secretary for Ireland whether he would state the number of prosecutions there had been in Ireland within the past two years against vendors of Irish salt firkin butter on account of it containing over 16 per cent. of water; how many of these cases had been dismissed and on what grounds; and what had been the percentage of water in the butter in these cases and the percentage of water in butter in the cases in which convictions had been obtained and the number of convictions.—Mr. LONG said: This information will take some time to collect and to tabulate but if I can procure it I will communicate it to the honourable Member. It appears to the Department of Agriculture and Technical Instruction that the results of the analyses of samples of salt firkin butter taken by the inspectors are of far greater importance than returns of convictions and dismissals, some of the latter no doubt on technical grounds. 1118 samples of firkin butter were taken for analysis by the local food inspectors in the following counties: Clare, Galway, Kerry, Limerick, Tipperary (N.R.), and Tipperary (S.R.), between May 15th, 1902 (the date on which the Sale of Butter (Ireland) Regulations, 1902, came into operation), and Dec. 31st, 1904. Of these samples 1022 were found to contain not more than 16 per cent. of water and 60 to contain over 16 and not more than 20 per cent. of water. In the remaining samples (36) the proportion of water exceeded 20 per cent. These facts show how small is the number of cases in which the water in the butter exceeds the 16 per cent. limit prescribed by the regulations under Sections 4 and 21 of the Sale of Food and Drugs Act, 1899, which are in force both in Great Britain and Ireland.

TUESDAY, APRIL 4TH.

*Cheap Mattresses and Sanitation.*

Mr. FULLER asked the Home Secretary whether his attention had been drawn to the alleged insanitary condition of certain cheaper kinds of flock used in the manufacture of cheap mattresses; if so, whether he proposed to take any steps, by initiating legislation or otherwise, to mitigate this alleged evil.—Mr. AKERS-DOUGLAS replied: My attention has been drawn to this question and reports have been received from the district inspectors of factories which are now under consideration. The reports go to show that the general returns of employment in this industry have improved in recent years, though the conditions are still far from satisfactory in many cases. The Home Office is only concerned with the matter in so far as the health of the workers engaged in the industry may be affected, and I shall be prepared to make use of the powers given me by the Factory Act for the protection of the workers in places where insanitary conditions prevail. Any measures, however, which may be required for preventing the spread of infection generally would be a subject for the consideration of the departments concerned with the public health.

## BOOKS, ETC., RECEIVED.

ARROWSMITH, J. W., Quay-street, Bristol.

Medical Philology. Gathered by L. M. Griffiths, M.R.C.S. Eng. Part I. A-El. Price not stated.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, W.C.

The Principles and Practice of Asepsis. By Arthur Styles Vallack, M.B. and Ch.M. Sydney, L.M. Rotunda, Surgeon to the Berrima District Hospital, New South Wales. Price 2s. 6d. net.

Elementary Microscopy. A Handbook for Beginners. By F. Shillington Scales, F.R.M.S. Price 3s. net.

Surface Anatomy. By T. Gillman Moorhead, M.D. Univ. Dub., M.R.C.P.I., Physician, Royal City of Dublin Hospital; late Chief Demonstrator of Anatomy and Joint Lecturer in Applied Anatomy, T.C.D. Price 4s. 6d. net.

Clinical Lectures on Appendicitis, Radical Cure of Inguinal Hernia, and Perforating Gastric Ulcer. By G. R. Turner, F.R.C.S., Surgeon and Joint Lecturer on Surgery, St. George's Hospital. Price 5s. net.

The Conjunctiva in Health and Disease. Being a Record of some Research Work. By N. Bishop Harman, M.A., M.B. Cantab., F.R.C.S. Eng., Ophthalmic Surgeon to the Belgrave Hospital for Children, Chief Clinical Assistant, the Royal London Ophthalmic Hospital (Moorfields). Price 10s. 6d. net.

BAILLIÈRE, J. B., ET FILS, 19, Rue Hautefeuille, Paris.

Le Traitement de l'Entérite Muco-Membraneuse. Par le Docteur A. Combe, Professeur de Clinique Infantile à la Faculté de Médecine de Lausanne. Price Fr. 3.50.

Tracheobronchoscopie et Œsophagoscopie. Par le Dr. Guisez, Ancien Interne et Assistant Adjoint d'Otologie des Hôpitaux de Paris, Chef des Travaux d'Oto-rhino-laryngologie à la Clinique Chirurgicale de l'Hôtel-Dieu. ("Les Actualités Médicales" Series.) Price Fr. 1.50.

Nouveau Traité de Médecine et de Thérapeutique. Publié en Fascicules. Sous la Direction de MM. P. Brouardel et A. Gilbert. I. Maladies Microbiennes en Général. Par Paul Carnot, Professeur agrégé à la Faculté de Médecine de Paris, Médecin des Hôpitaux. Price Fr. 4.

Travail de la Clinique Médicale de l'Hôtel-Dieu (Pr. Dieulafoy) et du Laboratoire de l'Hôpital Beaujon (Pr. agrégé Albert Robin). Essai de Coprologie Clinique. De l'Exploration fonctionelle de l'Intestin par l'Analyse des Fèces. Par René Gaultier, Ancien Interne des Hôpitaux, Licencié ès-sciences, Membre adjoint de la Société Anatomique. Price Fr. 6.

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.

Abdominal Pain, its Causes and Clinical Significance. By A. Ernest Maylard, M.B., B.S. Lond., Surgeon to the Victoria Infirmary, Glasgow, late Examiner in Surgery to the University of Glasgow and Victoria University, Manchester. Price 7s. 6d. net.

The Blood: How to Examine and Diagnose its Diseases. By Alfred C. Coles, M.D., D.Sc., F.R.S. Edin. Third edition. Price 10s. 6d. net.

COLLINGRIDGE, W. H. AND L., 148 and 149, Aldersgate-street, E.C.

The Book of the Potato. Illustrated. Edited by T. W. Sanders, F.L.S., F.R.H.S. Price 2s. 6d. net.

DOIN, O., 8, Place de l'Odéon, Paris.

Le Coryza Syphilitique, Rhino-pharyngite purulente septico-pyohémique, chez les Nouveau-nés Syphilitiques. Par M. le Dr. Paul Gastou, Ancien Chef de Clinique et Assistant de Consultation, Chef de Laboratoire de la Faculté à l'Hôpital Saint-Louis. (Extrait de la Revue d'Hygiène et de Médecine infantiles.) Price Fr. 2.

La Scrofule, Terrain Septico-Pyohémique héréditaire ou acquis et Diathèse Lymphoïde pré ou post-tuberculeuse. (Maladie Systématisée du Système Lymphatique et de ses Dépendances.) Par M. le Dr. Paul Gastou, Ancien Chef de Clinique et Assistant de Consultation, Chef de Laboratoire de la Faculté à l'Hôpital Saint-Louis. (Extrait de la Revue d'Hygiène et de Médecine infantiles.) Price Fr. 3.

Hygiène et Pathologie Cutanées du Premier Age. Par le Dr. Paul Gastou, Ex-Chef de Clinique et Assistant de Consultation, Chef de Laboratoire de la Faculté à l'Hôpital Saint-Louis. (Extrait du Traité d'Hygiène et de Pathologie du Nourrisson.) Price Fr. 4.

G. P. PUTNAM'S SONS, 24, Bedford-street, W.C.

Life Insurance Examinations. A Manual for the Medical Examiner and for All Interested in Life Insurance. By Brandreth Symonds, A.M., M.D., Medical Director, Mutual Life Insurance Co. of New York, Lecturer on Life Insurance Examinations at the University and Bellevue Hospital Medical College. Price 4s. net.

GRIFFIN, CHARLES, AND COMPANY, LIMITED, Exeter-street, Strand, W.C.

The Investigation of Mine Air. Edited by Sir Clement Le Neve Foster, D.Sc., F.R.S., late Professor of Mining at the Royal School of Mines, London; and J. S. Haldane, M.D., F.R.S., Fellow of New College and Lecturer in Physiology and Mining Hygiene, University of Oxford. Price 6s. net.

HEYWOOD, JOHN, Manchester, and 29 and 30, Shoe-lane, E.C.

Hydropathy in City and Town. An Account of Sixty Years' Practice of Home Treatment. By Joseph Constantine, Author of "Hydropathy, Health, and Longevity." Price 2s. 6d. net.

HOLDEN BROTHERS, 3, Harewood-place, Oxford-street, and Regent-street, W.

A Suffering Member. By Henry Holden. First edition. Price 6d.

LEWIS, H. K., 136, Gower-street, W.C.

The Sanitary Inspector's Handbook. By Albert Taylor, Member, Royal Sanitary Institute; Holder of the Inspector of Nuisances Certificate of the Sanitary Institute; Sanitary Inspector, City of Westminster. Fourth edition. Price 6s.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, E.C.

An Atlas of Dermatology, showing the Appearances, Clinical and Microscopical, Normal and Abnormal, of Conditions of the Skin. By Morgan Dockrell, M.A., M.D. Dub. Univ., Senior Physician and Chesterfield Lecturer on Dermatology to St. John's Hospital for Diseases of the Skin. Price 50s. net.

MACDOUGALL, ALEX., 68, Mitchell-street, Glasgow.

Transactions of the Glasgow Obstetrical and Gynæcological Society. Volume IV., Sessions 1902-03, 1903-04. Price not stated.

MACMILLAN AND CO., LIMITED, London.

Archives of the Middlesex Hospital. Volume IV. Comprising Contributions from the Clinical and Pathological Laboratories, together with the Annual Statistical Reports of the Registrars. Price not stated.

MASSON ET CIE, 120, Boulevard Saint-Germain, Paris.

Exploration des Fonctions Rénales. Etude Médico-Chirurgicale. Par J. Albarran, Professeur agrégé à la Faculté de Médecine de Paris. Chirurgien des Hôpitaux. Price Fr. 12.

NEW SYDENHAM SOCIETY, London. (Agent: H. K. Lewis, 136, Gower-street, W.C.)
An Atlas of Illustrations of Clinical Medicine, Surgery, and Pathology. Compiled for the New Sydenham Society. (A Continuation of the "Atlas of Pathology.") Fasciculus XXI. Being XIII. of the Clinical Atlas. Sarcoma Melanodes of Hebra. Plates CXXXV. to CXXXVI. Illustrations of Ringworm, Pityriasis, &c. Plates CXXXVII. to CXLII. Price to non-members half a guinea.

OFFICE OF THE SUPERINTENDENT OF GOVERNMENT PRINTING, Calcutta.
Report on Dourine in Different Breeds of Equines, together with an Account of Vesicular Exanthema and Pyroplasmosis which occurred as Complications. By Alfred Lingard, M.B., M.S., D.P.H., Imperial Bacteriologist to the Government of India. Price not stated.

PONSONBY AND GIBBS, UNIVERSITY PRESS, Dublin.
The Royal University of Ireland. Examination Papers, 1904. A Supplement to the University Calendar for the year 1905. Price not stated.

ROUTLEDGE, GEORGE, AND SONS, LIMITED, London.
The Mother's Guide to the Health and Care of her Children. By Mary Scharlieb, M.D., B.S. Lond. Price 1s.
A Woman's Words to Women on the Care of their Health. By Mary Scharlieb, M.D., M.S. Lond. Second edition. Price 1s.
A Practical Course of Instruction in Personal Magnetism, Telepathy, and Hypnotism. By George White. Price 3s. 6d. net.

SANITARY PUBLISHING CO., LIMITED, 5, Fetter-lane, Fleet-street, E.C.
The Food Inspector's Handbook. By Francis Vacher, Medical Officer of Health for Cheshire. Fourth edition. Price 3s. 6d. net.

SAUNDERS, W. B., AND CO., Philadelphia, New York, and London.
A Text-book of Legal Medicine. By Frank Winthrop Draper, A.M., M.D. Harv., Professor of Legal Medicine in Harvard University; Medical Examiner for the County of Suffolk, Massachusetts. Price 18s. net.

STEINHEIL, G., 2, Rue Casimir-Delavigne, Paris.
Leçons de Clinique Obstétricale. Par le Dr. Queirel, Professeur de Clinique Obstetricale à l'Ecole de Médecine et de Pharmacie de Marseille, Deuxième Série. Avec une Préface du Professeur Pinard. Price Fr. 6.
Le Tube Contourné du Rein. Etude Histologique Anatomo-pathologique Expérimentale. Par le Docteur Francis Rathery, Interne Médaille d'Or des Hôpitaux de Paris. Price not stated.
Traitement du Cancer Utérin Inopérable. Par le Dr. J. Récamier, Ancien Interne des Hôpitaux de Paris, Ancien Aide d'Anatomie à la Faculté, Chirurgien de l'Hôpital libre Saint-Michel. Price Fr. 3.50.
Travail du Laboratoire du Dr. Quénu (Hôpital Cochin). Les Dégénérescences des Fibro-myomes de l'Utérus. Par G. Piquand, Ancien Interne Lauréat des Hôpitaux, Prosecteur Previsoire à la Faculté de Médecine. Price not stated.

STOCK, ELLIOT, 62, Paternoster-row, E.C.
Decorating and Furnishing: What they often Are and what they Might Be. Notes by T. Myddelton Shalleross, Architect. Price 1s. net.

SWAN SONNENSCHEIN AND CO., LIMITED, London.
A Students' Text-book of Zoology. By Adam Sedgwick, M.A., F.R.S., Fellow and Tutor of Trinity College, Cambridge, and Reader of Animal Morphology in the University. Vol. II. Price 21s.

UNIVERSITY PRESS OF LIVERPOOL.
Cladorchis Watsoni (Conyngham). A Human Parasite from Africa. By A. E. Shipley. Reprinted from Thomson Yates and Johnston Laboratories Report, Vol. VI., Part 1., 1905. Price not stated.

VIGOT FRÈRES, 23, Place de l'Ecole-de-Médecine, Paris.
Les Indications des Interventions Chirurgicales dans les Maladies Internes. A l'Usage des Médecins Praticiens. Par le Professeur Dr. Hermann Schlesinger, de l'Université de Vienne. Traduction Française par les Docteurs L. Lichtwitz et J. Sabrazès de Bordeaux. Deuxième Partie. Price Fr. 4.
Précis de Radiographie Dentaire. Suivi de Notes sur l'Endodiascopie. A l'Usage des Chirurgiens-Dentistes et des Etudiants en Chirurgie Dentaire. Par René Darmezin. Préface du Dr. Foveau de Courmelles. Price Fr. 3.

WRIGHT, JOHN, AND CO., Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)
Errors of Refraction and their Treatment. A Clinical Pocket-book for Practitioners and Students. By Charles Blair, M.D., Fellow of the Royal College of Surgeons of England, Surgeon to the Western Ophthalmic Hospital, London. Price 2s. 6d. net.
Poisonous Plants of all Countries. With the Active, Chemical Principles which they contain; and the Toxic Symptoms produced by each Group. By A. Bernhard Smith, late Acting-House Surgeon to Lord Lister, King's College Hospital, London, late Surgeon to the Peninsular and Oriental Steamship Company. Matriculated at Paris University, Faculté de Médecine, Diplomate of the Society of Apothecaries of London. Price 2s. 6d. net.

# Appointments.

*Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to* THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANDERSON, C. A., B.A. Cantab., has been appointed Senior House Physician to St. Bartholomew's Hospital.

BIRKETT, H. J. D., B.A. Cantab., has been appointed Senior House Surgeon to St. Bartholomew's Hospital.

BLIGH, E. A. R., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

BOTT, R. H., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Surgeon to St. Bartholomew's Hospital.

BRODRIBB, A. W., M.A., B.M., B.Ch. Oxon., has been appointed Junior House Physician to St. Bartholomew's Hospital.

BURFIELD, J., M.B., B.S. Lond., has been appointed Senior House Surgeon to St. Bartholomew's Hospital.

COLT, G. H., B.A., M.B., B.C. Cantab., has been appointed Senior House Surgeon to St. Bartholomew's Hospital.

COVENTON, A. W. D., M.A., B.C. Cantab., has been appointed Junior House Surgeon to St. Bartholomew's Hospital.

CRIPPS, W. L., B.A., B.C. Cantab., has been appointed Senior House Surgeon to St. Bartholomew's Hospital.

CUMBERLIDGE, W. J., B.A. Cantab., has been appointed Junior House Surgeon to St. Bartholomew's Hospital.

ETHERINGTON-SMITH, R. B., M.B., B.C. Cantab., has been appointed Extern Midwifery Assistant at St. Bartholomew's Hospital.

FIELDING, C. H., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Physician to St. Bartholomew's Hospital.

FINCKH, A. E., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

GIBB, H. P., B.A. Cantab., has been appointed Junior House Surgeon to St. Bartholomew's Hospital.

GRÜNBAUM, Professor A. S., M.D. Cantab., F.R.C.P.I., has been appointed Honorary Pathologist to the Royal Infirmary, Leeds.

HADFIELD, C. F., M.A. Cantab., has been appointed Senior House Physician to St. Bartholomew's Hospital.

HEPWORTH, F. A., M.A., M.B., B.C. Cantab., has been appointed Senior House Physician to St. Bartholomew's Hospital.

HINE, T. G., M.A., B.C. Cantab., has been appointed Junior House Physician to St. Bartholomew's Hospital.

HOLMES, GORDON M., M.D. Dub., has been appointed Director of Neuro-pathological Research, National Hospital for the Paralysed and Epileptic.

HUDSON, B., M.A., M.B., B.C. Cantab., has been appointed Senior House Physician to St. Bartholomew's Hospital.

KAY, S., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

KIRBY, SAMUEL J. J., M.R.C.S. Eng., L.R.C.P. Edin., has been re-appointed permanently Medical Officer of Health to the Oulton Broad Urban District Council.

MCDOWELL, V., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

MCENCROE, J. M., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

MCKELVEY, J. L., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

MILLS, J. A., B.A., M.B., B.Ch., B.A.O. R.U.I., has been appointed Assistant Medical Officer and Pathologist to the Durham County Asylum.

MOORE, R. F., M.B., B.C. Cantab., has been appointed Ophthalmic House Surgeon to St. Bartholomew's Hospital.

NELIGAN, A. R., M.B. Lond., has been appointed Intern Midwifery Assistant at St. Bartholomew's Hospital.

PARKER, HERBERT F., M.D. Cantab., M.R.C.S., L.R.C.P., has been appointed Honorary Assistant Medical Officer to the Royal Surrey County Hospital, Guildford.

PAYNE, JAMES ROLAND, M.R.C.S. Eng., L.R.C.P., L.M. Edin., has been appointed Medical Officer of Health for the Coleford (Gloucestershire) Urban District Council.

PLOWRIGHT, C. T. M., B.A., M.B., B.C. Cantab., has been appointed Senior House Surgeon to St. Bartholomew's Hospital.

POWER, J. W., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

PRICE, ERNEST R., L.S.A., has been appointed Assistant House Surgeon to the Northampton General Hospital.

RIVIERE, B. B., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Surgeon to St. Bartholomew's Hospital.

ROBERTS, A. S. C., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

SIMPSON, G. W., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

SLADE, J. G., M.A., M.B., B.C. Cantab., has been appointed Junior House Physician to St. Bartholomew's Hospital.

SMITH, P. E. W., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

SPEERS, W. GORDON, M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Officer of the Hospital Samaritano, Sao Paulo, Brazil.

VERGE, A., M.B. Syd., has been appointed Resident Medical Officer at the Sydney Hospital, Australia.

VERNON, G. H., M.B. Syd., has been appointed Resident Medical Officer at the Royal Prince Alfred Hospital, Sydney, Australia.

WATKINS, ERNEST M., M.B., C.M. Glasg., has been appointed House Surgeon of Wrexham Infirmary.

WHITE, E. H., B.A., B.M., B.Ch. Oxon., has been appointed Senior House Physician to St. Bartholomew's Hospital.

WILLIS, J. K., B.A. Cantab., has been appointed Junior House Physician to St. Bartholomew's Hospital.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 and fees.

BIRKENHEAD UNION, INFIRMARY, WORKHOUSE, AND SANATORIUM.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, and apartments.

BIRMINGHAM CITY ASYLUM, Rubery-hill.—Junior Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

BRISTOL DISPENSARY.—Vacancy on Medical Staff.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant for three months.

CHELTENHAM GENERAL HOSPITAL.—Junior House Surgeon, unmarried. Salary £60 per annum, with board and lodging.

CHESTER, COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £50 per year, with board, apartments, and laundress.

CHRISTCHURCH UNION WORKHOUSE AND COTTAGE HOMES, Fairmile.—Medical Officer. Salary £150 per annum. Also Medical Officer of District No. 1 of the Union. Salary £120 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Pathologist. Salary 100 guineas per annum.

EBEW VALE WORKMEN'S DOCTORS' FUND.—Hospital Surgeon and Chief Medical Attendant. Salary £500 per annum.

EXMINSTER, DEVON COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £125, with board, residence, and laundry.

GERMAN HOSPITAL, Dalston, N.E.—Honorary Assistant Surgeon.

HOSPITAL FOR WOMEN, Soho-square, W.—House Physician for six months. Salary £30.

HULL ROYAL INFIRMARY.—Casualty House Surgeon. Salary £50 per annum, with board and lodging.

INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Two House Surgeons. Salaries—Senior, £100; Junior, £75 per annum, each with residence, board, and washing.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Second House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—Resident Clinical Assistant for three months, eligible for re-election. Free board, residence, and washing.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Assistant Medical Officer for the new Crossley Sanatorium, Delamere Forest, Cheshire. Salary £50 per annum, with board, apartments, and laundry.

MARGATE, ROYAL SEA BATHING HOSPITAL.—Resident Surgeon, as Junior for six months and as Senior for a like period. Salary at the rate of £80 and £120 per annum respectively, with board and residence. Also Honorary Visiting Surgeon.

NATIONAL HOSPITAL FOR THE RELIEF AND CURE OF THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury.—Resident Medical Officer. Salary £100 a year, with board and residence.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Junior Resident Medical Officer. Salary £70 per annum, with board, residence, and washing.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician. Also House Surgeon. Both for six months. Salaries at rate of 50 guineas a year, with board and residence.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board and residence.

RICHMOND, SURREY ROYAL HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board and apartments.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Four Examiners in Anatomy and Four Examiners in Physiology.

ST. GEORGE'S AND ST. JAMES'S DISPENSARY.—Honorary Physician.

ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

SOUTHWARK UNION INFIRMARY, East Dulwich, S.E.—Assistant Medical Superintendent. Salary £150 per annum, increasing to £160, with apartments, board, and washing.

STIRLING DISTRICT ASYLUM, Larbert, N.B.—Resident Clinical Assistant for six months. Board and lodging.

SUNDERLAND BOROUGH ASYLUM, Ryhope.—Assistant Medical Officer. Salary £120, rising to £160, with usual allowances.

SUNDERLAND, MONKWEARMOUTH AND SOUTHWICK HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

WAKEFIELD, WEST RIDING ASYLUM.—Junior Assistant Medical Officer. Salary £140, rising to £160, with apartments, board, washing, and attendance.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Junior House Surgeon. Salary £50 per annum, with board, lodging, washing, and attendance.

WINCHESTER, ROYAL HANTS COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £65 per annum, rising to £75, with board, residence, &c.

# Births, Marriages, and Deaths.

## BIRTHS.

CAMPBELL.—On March 31st, at the Caterham Asylum, the wife of Patrick E. Campbell, M.B., Medical Superintendent, of a son.

WATKINS.—On 25th March, at Stone-Legh, Newton-le-Willows, the wife of Harold E. Watkins, M.R.C.S. Eng., of a son.

## MARRIAGE.

STEVENS—MCINTYRE.—On March 29th, at St. George's, Hanover-square, by the Rev. David Anderson, M.A., rector, Alfred Edward Stevens, M.D., youngest son of the late George Stevens of Ealing, to Alice Morice, youngest daughter of the late Archibald McIntyre of Montreal. Canadian and S. African papers please copy.

## DEATH.

MATTHEWS.—On March 31st, at Sudbury, Suffolk, Alec Leslie Matthews, F.R.C.S., L.R.C.P., of the London Hospital, late of Norwood, aged 31.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## MOSQUITO-MALARIA THEORY 1400 YEARS OLD.

IN the course of an address given at the annual meeting of the Ceylon branch of the Royal Asiatic Society, the Governor of the Island, Sir H. Arthur Blake, made the following highly interesting remarks:—

> They prided themselves upon the enormous strides that had been made in science of late and especially within the last wonderful century; and among those discoveries there had been none of greater importance than the discoveries made in medicine and hygiene; and among those discoveries he did not know of any that had attracted more attention than the results of the investigations into that fatal and widespread disease that had afflicted humanity perhaps more than any other, by Manson, Ross, Celli, and others—malarial fever caused by the bite of the mosquito. The question to be asked was, Are we not merely recovering the crumbs of knowledge that fell from the table of the long-buried East? A short time ago Government instituted an inquiry into the incidence of malarial fever at Mutwal and during the inquiry he was surprised to see a communication from the Secretary of the Ceylon Native Medical Association mentioning that in old books the mosquito was mentioned as one of the means of propagating malarial fever. He was so struck that he made further inquiries and found that in the medical work of Caraka Susruta and other ancient Sinhalese writers it was mentioned that there were 67 kinds of mosquitoes, and further that there were four kinds of malarial fever caused by the bite of those mosquitoes. At present about 36 to 40 species had been named in Ceylon, of which Mr. Green had named 24. So that, as a matter of fact, recent discoveries were only re-discoveries. The books he referred to were written in the sixth century; therefore they had only re-discovered what was on record 1400 years ago. Those facts were rather interesting and he did not know whether any of those present could read Sanskrit, but the Interpreter Mudahyar was there and the books were there and the passages were there, showing from where they had been derived.

## A POSSIBLE DEVELOPMENT OF SERUM THERAPY.

*To the Editors of* THE LANCET.

SIRS,—Could any of your readers tell me whether there is anything opposed to the suggestion that the serum of a man or an animal, protected (by use and habit) against poisonous doses of morphine, arsenic, &c., would protect a normal individual against similar doses? Also whether any experiments have ever been made on these lines and the results published.

I am, Sirs, yours faithfully,

April 4th, 1905. INQUIRER.

## THE LORD OF THE MANOR'S HERIOT AT AN INQUEST.

*To the Editors of* THE LANCET.

SIRS,—The letter addressed to you in THE LANCET of April 1st, p. 900, is full of interest. A heriot was the best beast due to the lord of the manor at the death, natural or otherwise, of the copyholder, the second best being frequently bequeathed to the Church as a cors-present. This is one thing, but in the inquest reported by your correspondent a totally different state of affairs presents itself, inasmuch as "the Jury brought in the unlucky Beast in Value as low as Three pounds, thinking that sum would be a compencation to his Lordship." The fact that the jury valued the animal points strongly in favour of the stag being a deodand—not a heriot; in other words, as the guilty party causing the death and liable to forfeiture apart from any manor custom. In these circumstances there would appear to be a little confusion between "one of his own Horses" and "the stagg." It may be that a horse was suspected, but in evidence given at the inquest the stag was proved guilty. A stag was not usual as a heriot. I have dealt at some length on this topic in my recent book, "The King's Coroner," pp. 6-8 and 204-5.

I am, Sirs, yours faithfully,

R. HENSLOWE WELLINGTON,
Barrister-at-Law and Deputy Coroner.

Essex-court, Temple, E.C., April 3rd, 1905.

*To the Editors of* THE LANCET.

SIRS,—The "stagg" paid to the lord of the manor by Dr. J. J. Udale's ancestor could not have been a heriot. The heriot was the best beast belonging to the tenant, and to this the lord had a right on the death of the tenant, or on the succession of the heir, or both. In the case of Dr. Udale's ancestor, the "stagg" was not taken as of right by the lord, but was awarded to him by the inquest. This was the procedure regulating the transfer, not of heriots, but of deodands. A deodand was the instrument which had caused the death of a human being and which thereupon became forfeit to the king, by whom it, or its value, was to be handed over to the poor. This was clearly interpreted to mean the poor in spirit, for it is certain that the sovereign granted to many lords of manors the right to receive deodands. In the case

related, it was a horse which caused the death and yet the deodand awarded by the inquest was a "stagg." We can only conjecture the reason. It may have been that the horse had already been seized by the lord as a heriot; or it may have been that the inquest desired to curry favour with the lord by awarding something more valuable, or to show consideration for the tenant's family by awarding something less valuable. The share of the inquest in awarding the deodand is obvious. The deodand was the instrument which had caused death. The cause of death was not ascertained until the inquest had formally declared it. The deodand was contingent on the verdict.

I am, Sirs, yours faithfully,
Catford, April 2nd, 1905. CHAS. MERCIER.

*To the Editors of* THE LANCET.

SIRS,—I have read with interest the letter in THE LANCET of April 1st, p. 900, on the subject of "The Lord of the Manor's Heriot at an Inquest" and would like to add something which I have found in some old books in the library attached to the Royal Devon and Exeter Hospital. In the "Medical Jurisprudence," dated 1823, at London, by J. A. Price, M.D., &c., and J. S. M. Fonblamque, Esq., barrister-at-law, on the subject of the coroner's inquest, one reads:—

> "The Coroner, amongst other things, must enquire of the deodand, (the gift to the Gods,) which, on the violent death of anyone, even though purely accidental, has accrued to the King or his grantee. This mulct was in ancient times applied to the purpose of purchasing masses for the repose of the soul of the deceased; it is now converted into an ill-apportioned, arbitrary, or in a few cases, inadequate fine on the individual whose property has been, whether innocently or culpably, the cause of death. It is as absurd, that a ship under sail, from which a man has fallen, and been drowned, should be forfeited to the King, as if ..... where a thing is not in motion, that part which actually caused the death, is alone forfeited, as if a man be climbing on the wheel of a cart, and is killed by falling from it, the wheel alone is a deodand. But whenever the thing is in motion, not only that part which immediately gives the wound, (as the wheel which runs over his body,) but all the things, which move with it, and help to make the wound more dangerous, (as the cart and loading, which increase the pressure of the wheel,) are forfeited ..... it matters not, whether the owner were concerned in the killing or not. But juries have of late, frequently taken on themselves to mitigate these forfeitures, by finding only some trifling thing, or part of an entire thing, to have been the occasion of the death."

Paris does not explain the word "stagg" in his work but in an old book on folk-lore in the museum here one finds that it was in use in Cumberland to signify a horse under three years of age. In the case quoted the horse being under three years was the "stagg," and being the cause of the man's death was forfeited as a deodand to the King or his grantee.

I am, Sirs, yours faithfully,
W. HUDSON MARSDEN,
Assistant House Physician at the Royal Devon
Exeter, April 4th, 1905. and Exeter Hospital.

## THE CASE OF DR. A. D. GRIFFITHS.

*To the Editors of* THE LANCET.

SIRS,—Will you kindly allow me to acknowledge the receipt of the following additional contributions? Mr. W. C. Griffiths, 10s. 6d.; Dr. J. Shaw Lyttle, 10s. 6d.; already acknowledged, £70 14s. 6d.

I am, Sirs, yours faithfully,
ALEX. P. FIDDIAN, M.B. Lond.,
23, The Walk, Cardiff, April 4th, 1905. Honorary Treasurer.

## A CRUSADE AGAINST PHTHISIS.

*To the Editors of* THE LANCET.

SIRS,—Can any of your readers tell me where I can procure "A Crusade against Phthisis" by Dr. Gerrish (?) I do not know the publisher's name and am uncertain of the author's.

I am Sirs, yours faithfully,
April 3rd, 1905. H. W.

## DOVER AS A HEALTH RESORT.

*To the Editors of* THE LANCET.

SIRS,—In reply to "Paddington" I beg to say that if he will refer to Whitaker, fol. 762, he will find a condensed report of Dover as a health resort. In accordance with statutory requirements the medical officer of health issues a yearly statistical report which is printed and circulated amongst those for whom it is specially prepared.

I am, Sirs, yours faithfully,
M. K. ROBINSON, M.D. Erlang.,
Dover, April 3rd, 1905. Medical Officer of Health.

*To the Editors of* THE LANCET.

SIRS,—In answer to the letter of "Paddington" with respect to Dover as a health resort, I should like to say that the climate of Dover is excellent. The rainfall is small. The water-supply is absolutely pure and comes from the hills in the neighbourhood. The soil is for the greatest part chalk. The death-rate is, and has been for a long while, very low. The medical officer of health presents statistics every year and I expect they are published. I consider Dover a very desirable place residentially.—I am, Sirs, yours faithfully,

J. REGINALD LONG, M.R.C.S. Eng., L.R.C.P. Lond.
Dover, March 31st, 1905.

## THE VERAWILL FOOT-ROLLER.

WE have had submitted to us an apparatus under the above name. It consists of two rollers of about the diameter of an ordinary cylindrical ruler. They are made of wood mounted in brass and are fixed to a heavy wooden base. The method of using the apparatus is to place it on the floor and to roll the feet slowly backwards and forwards, using at the same time the hinge-motion at the ankle-joint somewhat after the proper method of pedalling on a bicycle. In this way the soles of the feet are massaged and the muscles of the calf, together with those on the front of the leg, are exercised. From a personal trial we can say that the use of it produces a pleasant warmth in the foot and we should think that it would be of benefit to those who suffer from cold feet, while it would also be a useful adjunct to the usual exercises prescribed for flat-foot. The price is 12s. 6d. and the apparatus can be obtained at 185, Victoria-street, London, S.W.

## MEDICAL WRITINGS BY MARAT.

*To the Editors of* THE LANCET.

SIRS,—The Royal College of Surgeons of England in 1891 reprinted two pamphlets, originally written by Jean Paul Marat, M.D., in 1775-76. The names of the pamphlets were: "An Essay on Gleets" and "An Inquiry into the Nature, Cause, and Cure of a Singular Disease of the Eyes." The writer was the well-known French revolutionary agitator Marat.

I should be obliged if any of your readers could inform me through your columns whether these are of any value.

I am, Sirs, yours faithfully,
Camden-road, N., April 2nd, 1905. HARRY JONES.

*J. C.*—The Departmental Committee on Food Preservatives in its report issued in 1901 came to the conclusion that as regards the trade in fresh and cured meat, fish, butter, margarine, &c., there exists no sufficient reason for interfering to prevent the use of boron preservatives. The limit recommended in the case of butter was 0·5 per cent. of boric acid, and cream 0·25 per cent. No limit was mentioned in the case of other foods and although the above limits are practically accepted in proceedings under the Sale of Food and Drugs Act they are not as yet statutory.

*Enquirer.*—We have no knowledge of the matter except what is stated at p. 403, vol. ii., of "The Life and Letters of Thomas Henry Huxley," Macmillan and Co., 1900, to which our correspondent is referred.

*Locus Standi.*—The extent to which botany is necessary in the medical curriculum is now under debate. We think too much has been required of the student.

*R. J. F.*—The lay press constantly make errors in medical titles and when we remember the anomalies connected with these titles we can hardly be surprised.

*Mr. W. C. Lewis.*—We take no interest in remedies where the alleged discoverer wishes to patent a proprietorship.

*Fresh Air.*—We think that the suggested recommendation would not be advisable.

# Medical Diary for the ensuing Week.

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (10th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

**TUESDAY (11th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

**WEDNESDAY (12th).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

**THURSDAY (13th).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.).

**FRIDAY (14th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Royal Ear (10 A.M.).

**SATURDAY (15th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

## SOCIETIES.

**MONDAY (10th).**—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Clinical Cases.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN (20, Hanover-square, W.).—6.30 P.M. Council. 8 P.M. Communications:—Mr. J. Ackery: Two Cases of Delayed Eruption and Extreme Malposition of Upper Incisors (illustrated by models, appliances, and a skiagram).—Dr. N. G. Bennett: (1) Twin Dentitions; (2) A Primitive Type of Dentition (both illustrated with models). Mr. V. Knowles will show (1) An Automatic Anæsthetic Capsule Breaker; (2) A Further Modification of Mr. Brunton's Gag.

**TUESDAY (11th).**—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Mr. A. W. M. Robson: (1) Actinomycosis of the Gall-bladder; (2) Adenoma of the Gall-bladder; (3) On the Operation of Jejunostomy, the description of a new method; (4) A Series of 123 Cases of Coledochotomy for Calculi in the Common Duct. (Demonstration on the epidiascope.)

MEDICO-LEGAL SOCIETY (Rooms of the Royal Asiatic Society, 22, Albemarle-street, W.).—8.15 P.M. Mr. Eustace:—Exhibition of Specimens. Paper:—Hon. Sir Joseph Walton: Notes on the Law of Evidence.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (17, Bloomsbury-square, W.C.).—8 P.M. Exhibition of Apparatus, Appliances, and Additions to the Library and Museum. Papers:—Mr. B. H. Farr and Mr. R. Wright: Powdered Alcoholic Extract of Belladonna Root.—Mr. R. Wright: The Occurrence and Distribution of a Mydriatic Alkaloid in *Lactuca Muralis*.—Mr. H. C. T. Gardner: The Displacement by Water in the Preparation of Certain Tinctures.

**WEDNESDAY (12th).**—DERMATOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.15 P.M. Demonstration of Cases of Interest.

HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—8.30 P.M. Clinical Evening.

**THURSDAY (13th).**—BRITISH GYNÆCOLOGICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Paper:—Prof. Jacobs (Brussels): Cancer of the Uterus; Surgical Treatment; Results. (Table Exhibition of the Various Forms of Cancer of the Uterus.)

**FRIDAY (14th).**—SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, W.).—5.30 P.M. Papers will be read by Dr. C. W. Chapman, Mr. R. C. Dun, Mr. R. A. Whitelocke, Mr. C. Batchelor, and Dr. Edmund Cautley.

CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Papers:—Prof. H. Marsh: (1) A Joint Affection possibly due to Malaria; (2) Cases of Intermittent Hydrops of Joints.—Mr. F. J. Steward: Two Cases of Hydronephrosis due to Moveable Kidney.—Mr. M. Robson: A Biliary Pulmonary Fistula cured by Hepatodochotomy.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**MONDAY (10th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. H. G. Adamson: Clinique. (Skin.) 5.15 P.M. Mr. W. B. Miles: Rectal Diseases.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—4 P.M. Mr. Dunn: Practical Ophthalmology.

**TUESDAY (11th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. C. O. Hawthorne: Clinique. (Medical.) 5.15 P.M. Dr. C. O. Hawthorne: The Visual Fields in Health and Disease.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3.30 P.M. Mr. C. Williams: X Rays.

**WEDNESDAY (12th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. T. P. Legg: Clinique. (Surgical.) 5.15 P.M. Mr. H. L. Barnard: Gastric Surgery.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Bidwell: Intestinal Surgery.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration: Dr. W. Wingrave: Ear.

**THURSDAY (13th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. C. O. Hawthorne: The Visual Fields in Health and Disease.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10.30 A.M. Dr. Candler: Bacteriology.

**FRIDAY (14th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. L. Paton: Clinique. (Eye.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.). 3.30 P.M. Mr. C. Williams: X Rays.

## EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

*It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.*

*Lectures, original articles, and reports should be written on one side of the paper only,* AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

*Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.*

*We cannot prescribe or recommend practitioners.*

*Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."*

*Letters relating to the publication, sale and advertising departments of* THE LANCET *should be addressed "To the Manager."*

*We cannot undertake to return MSS. not used.*

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## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, April 6th, 1905.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind | Rainfall. | Solar Radiation in Vacuo. | Maximum Temp in Shade. | Min Temp | Wet Bulb | Dry Bulb | Remarks at 8.30 A.M. |
|---|---|---|---|---|---|---|---|---|---|
| Mar. 31 | 30·05 | W. | ... | 97 | 57 | 39 | 41 | 42 | Cloudy |
| April 1 | 30·22 | S.W. | ... | 97 | 59 | 42 | 45 | 47 | Overcast |
| ,, 2 | 29·99 | W. | ... | 64 | 56 | 46 | 46 | 48 | Cloudy |
| ,, 3 | 30·10 | S.E. | ... | 79 | 53 | 40 | 41 | 42 | Foggy |
| ,, 4 | 29·97 | S.W. | ... | 79 | 55 | 42 | 46 | 48 | Overcast |
| ,, 5 | 29·76 | WNW | 0·01 | 95 | 56 | 47 | 48 | 51 | Cloudy |
| ,, 6 | 30·03 | N. | 0·03 | 94 | 48 | 37 | 34 | 39 | Fine |

**During the week marked copies of the following newspapers have been received:**—*Leeds and Yorkshire Mercury, Staffordshire Chronicle, Margate and Ramsgate Gazette, Liverpool Courier, Westminster Gazette, Engineer, The Scotsman, Morning Leader, Sanitary Record, Local Government Chronicle, Mining Journal, Glasgow Evening Times, Surrey Advertiser, Sussex Daily News, Birmingham Post, Notts Guardian, Dublin Express, Bradford Observer, Hereford Mercury, Manchester Guardian, &c.*

## Communications, Letters, &c., have been received from—

A.—Mr. E. Aylward, Humshaugh-on-Tyne; Anderson's College Medical School, Glasgow, Secretary of; Dr. Bertram Abrahams, Lond.

B.—Dr. R. W. Brimacombe, Lond.; Mr. W. B. Betenson, Hatch End; Dr. W. Bain, Harrogate; British American Safety Airlight Co., Lond.; *British and Colonial Druggist*, Lond., Manager of; Brin's Oxygen Co., Lond.; Messrs. Baxter and Son, Lond.; Messrs. J. B. Baillière et Fils, Paris; Mr. W. A. Beach, Pershore; British Gynæcological Society, Hon. Secretary of; Dr. Baillie, Nanking; Battersea, Medical Officer of Health of; Mr. W. S. Brown, jun., Edinburgh.

C.—Mrs. Clemenger, Carnarvon; Cumberland Infirmary, Carlisle, Secretary of; College of Preceptors, Lond., Secretary of; Cheltenham General Hospital, Hon. Secretary of; Mr. James Cantlie, Lond.; Messrs. Cassell and Co., Lond.; Cyclists' Touring Club, Lond., Secretary of; Mr. Robert Crowther, Manchester; Cash; Cantab.; Crewe, Medical Officer of Health of.

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T.—Dr. J. H. Tylecote, Wigan.

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